For CONTENTS, see pages iii and iv of Cover.

pp. 679–736.] [May 15, 1913.

TROPICAL DISEASES BULLETIN

IMPERIAL INSTITUTE
17 MAY 1913
LIBRARY

Vol. I. 1913. No. 12.

EXCHANGE COPY

ISSUED UNDER
THE DIRECTION OF THE
HONORARY MANAGING COMMITTEE
OF THE
TROPICAL DISEASES
BUREAU.

General Editor:
THE DIRECTOR OF THE BUREAU.

COMMONWEALTH MYCOLOGICAL INSTITUTE
26 MAY 1971

London:
TROPICAL DISEASES BUREAU,
Imperial Institute, S.W.

Sold by BAILLIERE, TINDALL & COX,
8, Henrietta Street, Covent Garden, W.C.

Price 1/6 net.] [*All Rights Reserved.*

HONORARY MANAGING COMMITTEE.

Chairman:

The Right Honourable Sir J. West Ridgeway, G.C.B., G.C.M.G., K.C.S.I., LL.D.,
(who is also Chairman of the Advisory Committee of the Tropical Diseases Research Fund).

Sir John Rose Bradford, K.C.M.G., F.R.S.,
(representing the Royal Society).

Surgeon-General Sir David Bruce, C.B., F.R.S.

Lt.-Colonel Sir R. Havelock Charles, I.M.S., G.C.V.O., C.I.E.

Colonel Sir William B. Leishman, R.A.M.C., F.R.S., K.H.P.

Sir John M'Fadyean, M.R.C.V.S.

Sir Patrick Manson, G.C.M.G., F.R.S.

Sir Ronald Ross, K.C.B., F.R.S.

Sir S. Stockman, M.R.C.V.S.

Mr. J. A. C. Tilley,
(representing the Foreign Office and Sudan Government).

Mr. H. J. Read, C.M.G.,
(representing the Colonial Office),
with

Mr. A. Berriedale Keith, M.A., D.C.L.,
of the Colonial Office, as Secretary.

STAFF OF THE BUREAU.

Director:

A. G. Bagshawe, M.B., B.C., D.P.H. Cantab.,
of the Uganda Medical Staff.

Assistant Director:

G. C. Low, M.A., M.D., *Lecturer, London School of Tropical Medicine.*

Librarian:

R. L. Sheppard.

Sectional Editors:

Fleet-Surgeon P. W. Bassett-Smith, R.N., C.B.,

Lieut-Colonel C. Birt, R.A.M.C.

Aldo Castellani, M.D.

Captain S. R. Douglas, I.M.S. (retd.).

H. B. Fantham, B.A., D.Sc.

Edward Hindle, Ph.D.

R. T. Leiper, M.B., Ch.B.,

F. M. Sandwith, M.D., F.R.C.P.

J. Henderson Smith, M.B., Ch.B.

David Thomson, M.B., Ch.B., D.P.H.

C. M. Wenyon, M.B., B.S., B.Sc.

Warrington Yorke, M.D.

Editor of the Tropical Veterinary Bulletin:

A. Leslie Sheather, B.Sc., M.R.C.V.S.

Aids to Tropical Medicine

BY

GILBERT E. BROOKE,

M.A. Cantab., L.R.C.P. Edin., D.P.H., F.R.G.S.: Port Health Officer, Singapore; Lecturer in Hygiene to the Medical School of the Straits Settlements.

Pp. xii + 163, with 30 illustrations.

Price, cloth, **2s. 6d.** net.

Aids to Tropical Hygiene

BY

R. J. BLACKHAM,

D.P.H. (Lond.), Major R.A.M.C.; Divisional Sanitary Officer, First Division, Indian Army: Kaiser-i-Hind Medallist for Public Service in India, etc.

Pp. viii+192, with 2 fold-in charts.

Price, cloth, **3s.** net.

LONDON:

BAILLIÈRE, TINDALL & COX,

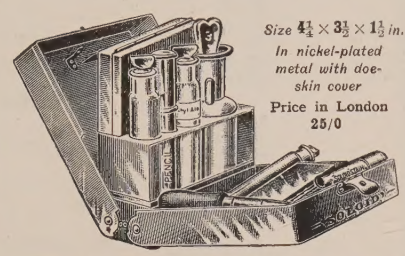
8, Henrietta St., Covent Garden.

TRADE MARK **'SOLOID'** BRAND

BLOOD TEST CASE

No. 506

Facilitates the preparation of blood, pus, sputum and other films for microscopical examination. A very compact, complete and portable outfit.



Size $4\frac{1}{4} \times 3\frac{1}{2} \times 1\frac{1}{2}$ *in.*
In nickel-plated metal with doe-skin cover
Price in London 25/0

BURROUGHS WELLCOME & CO., LONDON

NEW YORK MONTREAL SYDNEY
CAPE TOWN MILAN SHANGHAI
BUENOS AIRES BOMBAY

xx 539 *Copyright*

Telegrams—"Publicavit, Eusroad, London."

H. K. LEWIS,

ESTABLISHED 1844.

Medical Publisher and Bookseller.

Careful attention to Orders by Post, and from the Colonies and Abroad.

All Books specially packed for Book or Parcel Post, according to destination. Postage only charged.

COLONIAL LIBRARIES, COLLEGES and SIMILAR INSTITUTIONS—

Special facilities for executing Large Orders for Shipment to all parts of the World.

PERIODICALS, ENGLISH and FOREIGN, at Subscription Rates.

Books in General Literature not in Stock, supplied to Order.

136, GOWER STREET, and 24, GOWER PLACE, LONDON, W.C.

W. WATSON & SONS MICROSCOPES.

The Best British Instruments. Guaranteed for 5 Years.

THE "STANDARD" MICROSCOPE is unsurpassed for the Laboratory and Students' use. Its construction is exceptionally strong, and its design gives convenience for working in every direction.

ALL BEARINGS are slotted and sprung, so that any amount of wear can be corrected within a few minutes. WILL LAST A LIFETIME. EVERY PART IS STANDARDISED, and movements can be added as required.

"STANDARD" MICROSCOPE, as described, Stand only **£6 10 0**
Do. do. do. with 2 Eyepieces, Objectives 2/3" and 1/6" 0·74 N.A. (with 1 millimetre of working distance), Double Nose-piece, complete in Mahogany Case **£10 7 6**

Watson's Catalogue No. 2 TD of Microscopes and Accessories, will be sent gratis.

Microscopes and Accessories can be Purchased by Progressive Payments.

W. WATSON & SONS, Ltd., 313, High Holborn, London, W.C.

Optical Works:—High Barnet, Herts.
Branches { 16, Forest Road, Edinburgh. / 184, Great Portland Street, London, W.C.
Depots { 2, Easy Row, Birmingham. / 78, Swanston Street, Melbourne, Australia.
(ESTABLISHED 1837.)

LEITZ LONDON

Micro-Objectives.

The Glasses of which our Objectives are made up are exclusively of a kind which long experience has shown to be unaffected by atmospheric influences. The lenses are in particular not liable to undergo spontaneous changes.

The following is a selection from our Catalogue of recently improved Lenses:—

			£	s.	d.
ACHROMATIC.					
1½ in.	0·11 N.A.		0	15	0
1 in.	0·19 N.A.		0	15	0
2/3 in.	0·26 N.A.		0	15	0
1/2 in.	0·40 N.A.		1	0	0
2/5 in.	0·47 N.A.		1	5	0
1/6 in.	0·82 N.A.		1	10	0
1/8 in.	0·85 N.A.		1	10	0
1/12 in. oil imm.	1·30 N.A.		5	0	0
FLUORITE.					
1/6 in.	0·82 N.A.		2	0	0
1/8 in.	0·85 N.A.		2	0	0
1/8 in. (double fluorite)	0·95 N.A.		3	5	0
1/10 in.	0·87 N.A.		2	0	0
1/11 in.	0·87 N.A.		3	10	0
1/12 in. oil imm.	1·32 N.A.		6	10	0
1/16 in. do.	1·32 N.A.		7	10	0
APOCHROMATIC.					
16 mm. (2/3 in.)	0·30 N.A.		3	0	0
8 mm. (1/3 in.)	0·65 N.A.		4	0	0
4 mm. (1/6 in.)	0·95 N.A.		6	0	0
3 mm. (1/8 in.)	0·95 N.A.		6	10	0
2 mm. (1/12 in.) oil imm.	1·32 N.A.		12	10	0
2 mm. (1/12 in.) do.	1·40 N.A.		16	5	0

18, BLOOMSBURY SQUARE, W.C.

(A few doors from the British Museum.)

HORLICK'S MALTED MILK

MALTED BARLEY, WHEAT AND MILK in Powder Form.

Its value is based not alone on chemical qualities, but also on the possession of certain physical attributes, *e.g.*, palatability, solubility, ease of digestion and assimilation, etc., qualities moreover which cannot be ignored in the discussion of dietetic values. It is also true that the record of our product as a nutrient, for almost thirty years, bears irrefutable testimony to the genuineness of its physiological worth, and its general excellence as a food product.

Offered in Sterilized Glass Containers, especially adapted for use in the Tropics.

Samples to the Profession free by post on application to

HORLICK'S MALTED MILK CO., SLOUGH, BUCKS., ENGLAND.

Now Ready. Second Edition.

Thoroughly Revised and much Enlarged.

CASTELLANI & CHALMERS' TROPICAL MEDICINE.

"As regards fulness for reference on all Tropical Diseases, this Book has no rival."—*Journal of Tropical Medicine.*

Pp. xvi. + 1748. With 15 Coloured Plates and 630 other Illustrations, of which about 250 are new.

Price 21s. net.
(Weight for Postage, 5½ lbs.)

BAILLIÈRE, TINDALL & COX, 8, HENRIETTA STREET, COVENT GARDEN, LONDON.

TROPICAL DISEASES BUREAU.

TROPICAL DISEASES BULLETIN.

Vol. I.] 1913. [No. 12.

PELLAGRA.

Wood (Edward Jenner). **A Treatise on Pellagra for the General Practitioner.** 1912. New York & London: D. Appleton & Co. xiv. + 377 pp. With 38 illustrations in text. [16*s*. net.]

This book is from the pen of the chairman of the North Carolina Pellagra Commission, who, in 1907, before G. H. Searcy had discovered the existence of pellagra in Alabama, had reported the case of a lunatic suffering from what was erroneously called symmetrical gangrene of the skin. The author now states that this was a case of true pellagra, in whose blood both tertian and quartan malarial parasites were also found.

He has verified the greater portion of Tizzoni's claims in his own laboratory in North Carolina, but "after a careful study the only conclusion that seems justifiable is that the disease produced by the strepto-bacillus of pellagra (Tizzoni) was not pellagra."

The writer tells us that he is not a believer in the maize theory, and he speaks with profound respect of Sambon's views, though he cannot accept his statement that pellagra is limited to certain rural districts only, avoiding towns and villages. The youngest patient seen by the author was 22 months old, but he has only seen one fatal case in childhood—a negress aged eleven years. One is surprised to learn that in some general hospitals in the Southern States there are restrictions forbidding the admission of pellagrous cases to the wards; the author mildly agrees with the many writers who have shown that the disease is not communicable from man to man.

In the excellent chapter on skin manifestations there are some good photographs and there is a diagram of a young woman whose "skin lesion covered the whole of her back from the lower border of the scapula up to the very hair border of the neck and anteriorly from the upper portion of the breast to the chin. The remarkable feature of this case is that where the chemise shoulder straps crossed the shoulders there was no skin involvement at all." The author rightly observes that he knows no way of differentiating a recent sunburn from a recent initial attack of pellagrous

(29765—2.) Wt. P 321—84. 1800. 5/13. D & S.

erythema. He is of opinion that "the symptoms of sprue are almost identically those of pellagra without skin manifestations."

[From this we must assume that he has never seen a case of typical sprue, for, though he quotes Sir P. MANSON'S writings, he has not mentioned the vesicles and ulcers of the mouth in sprue, nor the absence of nervous and mental sequelae in so many cases of that disease.]

Many cases of pellagra in the past have been diagnosed in the United States as chronic eczema. It is rather surprising to learn that it is a daily problem with the author and his colleagues to differentiate between syphilitic myelitis and similar pathological conditions produced by pellagra, pending a Wassermann or Noguchi test. Four excellent micro-photographs of the dorsal region of the spinal cord, prepared by H. A. COTTON from a negress, aged 17, confirm the pathological findings originally made by TUCZEK in 1893. The author points out that the chief interest of this case lies in the fact that the girl only began to be ill early in May 1909, and died towards the end of the following August, yet at the autopsy, which could only be partially performed, owing to threatening negroes, the organic changes were present which are not usually found until the third year of the disease. It was a very severe case from the beginning, for on June 11th, after severe pain in the lumbar region, she had lost the use of the lower limbs; the paraplegia was quickly followed by extreme emaciation, bed sores, retention of urine, vomiting, oedema of the feet, stupor and slight fever. He further tells us that in one house he saw three deaths after only six weeks' illness. This very acute or fulminating type of pellagra is as incurable as is acute miliary tuberculosis. He compares these acute cases in epidemic form in the United States with the outbreak of measles in Fiji in 1875, when 40,000 out of the 150,000 inhabitants died within four months. He now believes, however, that pellagra in America has settled down into a chronic endemic form, because for more than two years he has not seen a fulminating case. The large majority of fatal results was in patients whose skin lesions were of the moist variety, and he has noticed that coarse clonic contraction of the muscles of the forearms is a symptom always followed by death. He agrees with other observers that the co-existence of hookworm disease or alcoholism affects badly the prognosis. It is pointed out that treatment need not await the solution of the question of etiology, for both malaria and syphilis were provided with specific drugs years before their etiology was determined. He praises atoxyl and other forms of arsenic, disbelieves in quinine, except for pellagra complicated by malaria, and has great faith in change of climate. This useful book, which contains pages of quotations from other writers, closes as follows:—

"Pellagra can no longer be counted among the incurable maladies. There is as much hope of success in its treatment as in many other diseases which are counted far less malignant. It is not a self-limited disease and, unless vigorously treated from the beginning, the same result must be expected as in improperly treated syphilis. The therapeutic nihilist has no more right to treat pellagra than to treat syphilis. Finally the fact must be emphasized that the most successful treatment of pellagra consists in the early diagnosis."

F. M. Sandwith.

Etiology.

Jennings (Allan H.) & King (W. V.). **One of the Possible Factors in the Causation of Pellagra.**—*Jl. Amer. Med. Assoc.* 1913. Jan. 25. Vol. 60. No. 4. pp. 271-274.

The authors premise that the essential factors in the cause and spread of pellagra must be uniformly active wherever the disease is endemic. They then assume that pellagra is an insect-borne disease, and quote Knab's finding that for an insect to be a potential transmitter of human disease, the following four factors are essential: the habit of biting man regularly, more or less close association with man, a certain degree of longevity and, finally, abundance. These are among their conclusions:—

"Under conditions existing in the region of pellagrous endemicity in South Carolina, the lice, fleas, mosquitoes and bedbugs show characteristics of habit, distribution and abundance which appear to exclude them from serious consideration in this connection.

"The biting habits and, to a certain extent, the distribution of the flies of the genus *Simulium*, together with their lack of habits which bring them into close association with man, seem to present weighty arguments against the incrimination of these gnats as the active agent in the transmission of pellagra.

"The cosmopolitan biting stable-fly, *Stomoxys calcitrans*, from its distributional and biting habits, its close association with man, its conformation to the obvious requirements of the disease-transmitting insect and the agreement of its special characteristics with the phenomena incident to the occurrence of pellagra, offers strong reasons for its consideration under the premises.

"It is hoped that attention may be directed to this fly and observations bearing on its possible relation to the disease be generally made."

F. M. S.

Tizzoni (G.) & De Angelis (G.). **Studi Intorno alla Biologia e alla Morfologia dello Streptobacillo Pleomorfo della Pellagra. Nota Preventiva.** [Preliminary Note on the Biology and Morphology of the Streptobacillus of Pellagra.] — *Pathologica.* 1913. Mar. 15. Vol. 5. No. 105. pp. 173-174.

The second author, while studying in Bologna the movements and the velocity of the streptobacillus, gradually discovered the existence of two types. Type A, which is Gram-negative and does not liquefy gelatine, can, under certain circumstances, pass into Type B, which is Gram-positive and liquefies gelatine. The authors cannot account for some of the phenomena which they think they ought to report. They now consider, from further study of its morphological characters, that the streptobacillus should be classed in the group of the Actinomyces.

F. M. S.

Mills (H. P.). **Pellagra with Special Reference to Pathology of Gastro-Intestinal Tract.** — *Jl. Amer. Med. Assoc.* 1913. Mar. 22. Vol. 60. No. 12. pp. 889-892. With 3 figs.

Notes are given of four autopsies upon five cases which died in a hospital at St. Joseph, Missouri. The patients were all

women, aged 40 to 64, and three of them had lived in the asylum for periods varying from three and a half to thirteen years. The changes found were those of a chronic catarrhal inflammation, in one case extending from the oesophagus to the transverse colon, and in some areas there was haemorrhagic inflammation of the mucous membranes.

"Microscopic examination of sections of the stomach wall (in one case where the skin lesions had only been noticed for four weeks) showed superficial necrosis with extensive destruction and exfoliation of glandular epithelium, infiltration between the gland tubules, frequently haemorrhagic, with cystic dilatation of the gland tubules. The vessels in the submucosa were greatly dilated and atrophy of the muscular layers was noted . . . In the lower portions of the ileum there was almost entire destruction of the mucosa; only in areas were epithelial remnants seen, a narrow line of partially necrotic tissue being left to mark its location. The muscular layers were atrophied so that in this region the intestinal wall was extremely thin. Sections taken from the caecum and ascending colon showed a destructive process similar to that in the ileum."

The general findings "would seem to coincide with the theory that toxic products cause pellagra, whether taken with food products or of endogenous origin. In the cases observed no probable causative factor in the food could be found."

The figures represent the skin lesions in the patient, aged 64, from whose autopsy the quotation has been taken.

[No information about the diet is given.]

F. M. S.

Symptomatology and Pathology.

Cohoon (E. H.) & Farnell (F. J.). **Pellagra with a Report of 17 Cases.**—*Boston Med. & Surg. Jl.* 1913. Jan. 9. Vol. 168. No. 2. pp. 50-56.

Writing as Rhode Island neurologists, the authors tell us that pellagra was first discovered in that state in the summer of 1910. The cases now reported were patients in the lunatic asylum at Howard, and fifteen of them were adult females. It is considered that the complex reaction of pellagra is due to a toxine or an infection which produces changes in the blood and spinal fluid, and a non-systemic degeneration of the cerebro-spinal axis. The blood count showed a variation of haemoglobin from 60 to 100 per cent., a distinct increase in mononuclears and a decrease in polymorphonuclear leucocytes. Nine of the seventeen cases were submitted to lumbar puncture and the spinal fluid was examined cytologically, chemically and for the complement deviation. The reaction was alkaline in five and neutral in four. In only one were there no "pleocytes," the remaining eight showed a count of from two to nine small lymphocytes per cmm. The quantity of globulin content showed no increase and each case evinced the presence of a reducing body. The complement deviation in all was negative in the spinal fluid and in two of the blood sera.

Four autopsies were made; two of them showed tubercle of lungs and intestines, so the central nervous system was not examined; the microscopical results of one case are not yet ready, but those of the fourth case are recorded. An American woman, aged 63, was admitted to the asylum in 1887 for dementia precox.

In August 1909 she suffered from persistent diarrhoea, which improved during the winter months. In August 1910 diarrhoea returned with erythema on the hands; improvement again in the winter. In July and August 1911, diarrhoea, "skin lesions, and knee jerks diminished with no sensory disturbances." Sections from the brain showed: "regressive changes in the pia which was free from any infiltration; in the cortex the nerve cells stained diffusely and the largest pyramids showed incipient and well advanced axonal alterations, *viz.*, glassy swelling of the centres of the cells, destruction of the central stainable substance with preservation of the stainable bodies in the periphery of the cells and displacement of the nucleus toward one side. The neuroglia showed moderate progressive change with a definite increase in the satellite cells, which occurred about the nerve cells or as independent clusters, as well as along many of the blood vessels. There was also considerable pigment in the ground substance, largely within the neuroglia cell bodies. The section from the cerebellum showed, perhaps, the Purkinge cells staining more diffusely and some of them showed a fairly typical axonal alteration. The lumbar cord section evinced the pia essentially normal, but many of the ventral horn cells indicated a well marked axonal alteration and others showed only incipient axonal changes."

In more than half the cases the knee jerks were absent and others had diminished knee jerks, while eight cases "evinced distinct evidence of peripheral polyneuritis, even to the extent of foot drop and muscular atrophy." The authors inquire whether it is not possible or even probable for pellagra to produce neuritic symptoms of central as well as of peripheral origin.

Conclusion:—"The microscopic findings in the central nervous system are such as are comparable essentially to that rare disease known as 'Central Neuritis,' the nerve cells showing an infectious or febrile condition of essentially a parenchymatous reaction."

F. M. S.

Robbins (F. C.). **Report of a Case of Pellagra.**—*Med. Record.* 1913. Jan. 11. Vol. 83. No. 2. pp. 55-56.

A woman, aged 42, who had never been out of the State of New York and who barely supported herself and two children by charing, had some premonitory symptoms of diarrhoea and exhaustion, but did not apply for treatment for a recent pellagrous rash on the back of one hand until June 4, 1912. She died on July 28, of dysenteric diarrhoea, stomatitis, mental depression and the partial dumbness which so often accompanies the nervous symptoms of pellagra. Her early death may have been influenced by exophthalmic goitre, which can be recognised in the illustration in the paper.

The brain was examined at the New York Psychiatric Institute, and reported on as follows: "The largest nerve cells (Betz cells) of the motor area and some of the pyramids next in size showed extensive axonal alteration of the type seen in 'central neuritis,' as described by A. Meyer. These cells also contained a good

deal of pigment, and fat stains showed considerable lipoid substance in most of the larger nerve cells and about the neuroglia nuclei."

Maize meal was apparently not an important part of the woman's diet.

[The spinal cord does not seem to have been examined after death.]

F. M. S.

Sherman (W. H.). **A Case of Pellagra.**—*Boston Med. & Surg. Jl.* 1913. Jan. 9. Vol. 168. No. 2. p. 50.

The patient described was a labourer in a woollen mill, aged 68, English by birth, but had lived in Massachusetts for the last nine years. A previous history of indigestion, bodily fatigue and mental irritability was followed, in August 1912, by an erythema which began on the backs of the hands and was seen later on the face and back of the neck. "Bullae and vesicles appeared on the hands but not on the face." Severe stomatitis, epigastric discomfort, emaciation, loss of memory and mental depression occurred. "He denied having eaten maize or any corn products."

[Bullae, though rare in most pellagra countries, seem often to be met with in the United States.]

F. M. S.

Green (B. E. M.). **A Review of 131 Cases of Pellagra.**—*Southern Med. Jl.* 1913. Mar. Vol. 6. No. 3. pp. 171-174.

The Director of the Georgia State Sanitarium submits some statistics on lunatics admitted during the past twenty months. The greater number were suffering on admission from a first attack of pellagra, though one was said to have had an attack annually for the last ten years. The patients were coloured and white, of both sexes, mostly born in Georgia, married and engaged in agricultural pursuits. As regards social circumstances more than half of them belonged to the class of wage-earners who have sufficient for the day, but who put by nothing, while a quarter of them lacked sufficient food and clothing.

The chief complications mentioned were pulmonary tuberculosis, cardiac valvular disease, arterio-sclerosis and syphilis. [Alcoholism and hookworm disease do not appear on the list.] Death accounted for 61 per cent., but most of the others recovered from the pellagra, though not always from the insanity. The chief subjective complaints were headache and giddiness, mental condition usually depressed, with confusion of thought, restlessness and loss of memory for recent and remote events. The deep reflexes were increased in 91 cases, diminished in ten, and absent in three patients. 24 had suicidal tendencies and 53 had persecutory delusions.

F. M. S.

Rossi (Ottorino). **Klinischer und anatomo-pathologischer Beitrag zur Kenntnis des sogen. Pellagratyphus.** [Clinical and Pathological Contribution to Knowledge of so-called Pellagra-Typhoid.]—*Jl. f. Psychologie u. Neurologie.* 1913. Jan. Vol. 20. No. 1-2. pp. 1-23. With 1 plate.

This contribution is from the temporary Director of the Clinic for nervous and mental diseases in the Royal University of Sassari, Sardinia, and is illustrated by 15 micro-photographs, besides a plate of beautifully coloured cells from the spinal cord, brain, sympathetic ganglia and pancreas. The author reports in detail a case which he studied in Florence in 1911. The patient had been an eater of large quantities of maize, was a peasant 60 years old and already pellagrous for 7 or 8 years before he was admitted to the hospital. He died four days after admission; his temperature varied between 100° and 102°. On first examination it was thought that his mental condition was too confused for him to be able to give an account of himself, but next day, when his mind was clearer and quieter, he was able to answer short questions, though he very easily became fatigued and had loss of memory for recent events. His only skin lesions were on the backs of his hands; the pulse was small and rapid, but not easily compressible; breath fetid, gums inflamed, tongue dry with raised papillae and a thick sooty layer at the back; diarrhoea with yellow motions.

The results of the post mortem examination supported the diagnosis because no other gross lesions were found. The author quotes Kozowsky as saying that there is no alteration at necropsy peculiar to pellagra. On microscopical examination degeneration of the cord, as originally described by Belmondo, was present, besides recent alteration of the anterior horn near the lateral ventricle and the simultaneous occurrence of the phenomena of primary and secondary reaction.

It is obvious that the diagnosis of pellagra-typhoid must be more clearly defined and before coming to the diagnosis certain diseases must be excluded, such as enteric fever occurring in a pellagrous patient, para-typhoid and infection by bacillus coli and other secondary infections by which a pellagrin might be attacked.

It is also necessary to diagnose the condition in lunatics from ordinary amentia, but the author considers that the infrequency of hallucinations, the general friendliness of the patient, the possibility of obtaining correct answers from him and many other signs are sufficient to distinguish pellagra-typhoid from amentia. He maintains that it is wrong to consider that this symptom complex is merely an acute stage of pellagra. He finds himself in agreement with other authors, who have stated that pellagra-typhoid only occurs in patients who have suffered from pellagra for a definite period of time, such as two to eight years. Usually the condition only arises after the patient has been for some months in an institution. The author thinks that this stage would be better understood if the symptom complex were considered a phenomenon of hypersensibility. This might explain why the complication only appears among people already infected with

pellagra, and why it may occur among them, even if no chronic degeneration of the parenchymatous organs exists. The experiments of Ascoli prove that hypersensibility phenomena may occur in pellagra, for he produced a febrile condition in pellagrous patients by injecting a watery solution of diseased maize, though he could not cause a rise of temperature in normal people. Later, Volpino found that the injection of one or two cc. of the same solution caused in most pellagrins fever, stupor, coma or mental excitement and tremors, whereas a similar injection into a healthy person or into a patient suffering from other nervous diseases only elicited a very slight rise of temperature.

F. M. S.

Malfilatre & Devaux. **Du Syndrome Pellagroide.**—*Ann. Médico-Psychologiques.* 1913. Jan. 10 ser. Vol. 3. (81st year.) No. 1. pp. 15-22.

During 1911 three chronic lunatics under the care of the authors developed diarrhoea and skin lesions in the St. Lizier Asylum near the Spanish frontier. The patients had been in the asylum for periods of five years, three years, and fourteen months before the erythema was discovered. The authors confess to very little knowledge of pellagra and allow that two of the patients were tubercular, as verified by autopsy, while the third who suffered from epilepsy and rheumatic pains had just undergone boracic acid treatment which had produced "swelling of the legs, erythema and loss of appetite." These three cases were not associated with bad maize, nor with the sun's rays.

The authors ask whether pellagra is a real pathological entity.

F. M. S.

Epidemiology.

Grimm (R. M.). **Pellagra. A Report on its Epidemiology.**—*U.S. Public Health Rep.* 1913. Mar. 7. Vol. 28. No. 10. pp. 427-450. With 13 charts; and Mar. 14. No. 11. pp. 491-513. With 6 plates and 3 maps.

This is a report upon field work during the summers of 1911 and 1912 by a medical officer of the United States Public Health Service, who visited 25 counties in South Carolina, Georgia and Kentucky. More than 200 medical practitioners were interviewed and information was obtained about 1,426 cases, of which 323 were seen by the author, who also personally visited 296 pellagrous homes. South Carolina supplied more than half the total number, mostly among white women aged between 20 and 40. Among the coloured patients, nearly three-fourths were women, and no explanation can be given of the great preponderance in both races of affected females. The month of onset of the symptoms was determined in 181 cases and it was found that nearly three-fourths of the patients referred the beginning of their troubles to months between April and July. Most of the families affected "seemed to be living a hand-to-mouth existence depending for their support upon what they earned from day to day.

Cases were seen, however, among the well to do, who had developed the disease under conditions and living environment which apparently seemed above criticism."

Most of the houses visited bore signs of negligence, shiftlessness and bad hygiene and even when sufficient wages were being earned, the families did not seem to understand the art of improving their home conditions.

As regards insects the bug and house fly were usually present, and, when looked for, Simulium near the affected houses was discovered by the entomologists, Messrs. JENNINGS and KING. Maize granaries supplying two families in country districts were "found to be heavily infested with weevils and moths."

The districts visited appeared to be well watered and to have numerous streams running through them; in fact it was difficult to find areas far removed from running water. Swamps and ponds were also numerous, mosquitoes and malaria were common. The economic condition of the pellagrous was classified as 258 living in poverty, 59 in comfort and 6 in affluence.

"Not a few of the pellagrins who had been born and reared in the country had apparently not developed pellagra until after they had moved into the environment of a village or town," where they became wholly dependent for their food upon small stores.

Every one of the 323 cases personally seen gave a history of the more or less regular use of maize products as articles of diet and much of the maize had been imported from other states. In several of the districts it was reported "that some of this imported meal had been condemned after a chemical examination of it had been made. In a number of instances the pellagrins described the condition of the meal at the time they had bought it at the stores as being sour, sorry or musty, but many of them considered the meal which they had been using as first class." In making the house-to-house visitation, many early unrecognised cases were discovered, and though the author has not included these doubtful cases amongst his figures, he has heard that some of them "have since developed the disease in pronounced form and succumbed to it."

The author finds in his summary that more pellagrous cases developed in small towns and villages than in rural districts. He declines at present to form any definite conclusions regarding the etiology of the disease.

"The possibility of some insect playing a part in the dissemination of the disease does not seem inconsistent with the facts presented above. From my observations the relationship between food and pellagra seems to be a real one, but whether the character of the food may act only in predisposing to conditions which favor the development of pellagra, or whether certain articles of food act as the real exciting agent, or whether they act only as exaggerators of the symptoms (as the sunlight, for instance), is an open question. It is possible that certain articles of food may act in all three ways. In the present state of this question no investigation of the etiology of pellagra can entirely ignore the character of the food supply used by the people among whom the disease is prevalent. The great prevalence of pellagra in certain districts and the important relation that exists between pellagra and the public health would seem to be ample justification for undertaking on a large scale the

herculean task of unraveling the etiology of this puzzling disease, in order that measures based on fact might be instituted for its prevention."

[A valuable unbiassed contribution. It is to be hoped that the United States Government will not turn a deaf ear to these closing lines of the report.]

F. M. S.

Brault (J.). **Note sur la Pellagre en Algérie.**—*Bull. Soc. Path. Exot.* 1913. Mar. Vol. 6. No. 3. pp. 198-201.

The author records 29 cases which have been observed in Algiers between 1898 and 1911. Though in one year there were eight cases admitted, the disease would appear to be present only sporadically. Half the patients were natives, the remainder were mostly Spanish or French, all very poor, and some of them alcoholic. It is stated that the patients had never eaten maize, or if they had eaten it it was at rare intervals and long ago.

[No information is given as to whether or not pellagra is found in the country districts of Algiers.]

F. M. S.

Sambon (L. W.) & Chalmers (A. J.). **Pellagra in the British Islands.**—*British Med. Jl.* 1912. Oct. 26. pp. 1093-1096.

The authors state, without hesitation, that pellagra is endemic and has long been endemic in various parts of the United Kingdom. The first notice of it was by Dr. Brown, Inspector-General of the Scottish Lunatic Asylums, who found in 1860, two idiots of one family in the remote east of Scotland with "an alteration of the skin which he qualifies as a kind of pellagra." In 1866, Dr. J. C. Howden, Medical Superintendent of the Montrose Royal Asylum, published a case of typical pellagra in a female factory spinner from Arbroath, Forfarshire, who had been admitted under his care in August 1863. The next certain case was published in 1909 and occurred in a young woman from Shetland, who was admitted to the Royal Edinburgh Asylum in 1908; Dr. R. D. Brown and Dr. R. C. Low described her as suffering from dermatitis of face, backs of hands, wrists and lower parts of fore arms, backache, spastic legs, stomatitis, diarrhoea and delusions. In April 1912 Dr. R. C. Low had the advantage of seeing some pellagrous peasants in Italy and stated to the authors that the Italian symptoms were identical with those of the Shetland case and also resembled an unrecorded case from Fifeshire, which he had seen in Edinburgh in 1911.

The authors, in the autumn of 1912, visited Scotland to try and see how far pellagra is prevalent there, and they now state that it is "certainly endemic in Fifeshire, Forfarshire, Aberdeenshire and the Shetland Islands." Among other suspected areas they visited the village in Fifeshire where the unrecorded case had always lived until her death in 1911. In the fields adjoining a stream near her birthplace they "obtained very clear statements from the field labourers of the attacks of small biting flies coming in clouds in the early morning, and especially in the evening."

In this stream the authors found many larvae and some pupae of Simuliidae. No history of this patient having eaten maize could be obtained, but she had a peculiar habit of eating raw oatmeal. The authors had the opportunity of examining the three children of this patient; they showed no signs of pellagra, but they are inclined to believe that the sister of the patient is also pellagrous. At the Aberdeen Royal Asylum they were told by the Superintendent of a possible case from New Aberdour, which had recently died in the asylum; the medical officers recognised that the skin lesions of this case were similar to those shown in photographs of Italian pellagra.

"On the Ugie, a typical Simulium stream, near Peterhead, Aberdeenshire, we met several children presenting the peculiar skin lesions characteristic of pellagrin children after the subsidence of the eruptive stage."

The Slough case published by Dr. Box is next referred to with the probability that a dead brother had also died from pellagra, under the diagnosis of combined sclerosis of the spinal cord.

The authors conclude by stating that etiologically the presence of pellagra "in the United Kingdom is of importance, because here its causation cannot be reasonably explained by the consumption of either sound or bad maize, and its topographic distribution shows that here, as elsewhere, it is linked to the swift-flowing Simulium-infected streams." They suggest that investigation of the old case-books of our lunatic asylums will bring to light instances of overlooked pellagra and they entreat British physicians now to be on the look-out for mild forms of the disease.

F. M. S.

Treatment.

Niles (George M.). **The Treatment of Pellagra. Its Present Status.**—*New York Med. Jl.* 1913. Jan. 18. Vol. 97. No. 3. pp. 116-119.

Based upon experience gained in the care of more than 300 cases, the author classes his treatment under the four headings of hygiene, diet, drugs, and baths, leavened "at all times with a hopeful and helpful psychotherapy." He finds that alcoholic intemperance does more harm than in any other disease and counsels the avoidance of direct or indirect sunlight during the early spring months. He also believes in the action of heat and mentions the case of a female pellagrin who went into the kitchen and prepared one meal in the temporary absence of the cook; "she had shown no dermal signs of the disease for over two months, yet on the next day an acute erythema of the hands and face developed." His diet includes no maize, nor food made from maize; he praises meat and butter-milk and finds that the early diarrhoea, being mainly of central origin, does not require too limited a regimen. Though a strong believer in iron and arsenic subcutaneously and a combination of iodide and potash and Fowler's solution by the mouth, he does not consider that salvarsan is of value. He gives a solution of thymol or boroglycerine for the

sore mouth, zinc ointment for the skin and treats intense burning sensations of hands and feet either with ice cold compresses of a weak solution of bichloride of mercury (for unbroken skin), or with baths of hot mustard water. It is sad to hear that "drainage of the gall bladder, appendicostomy and other surgical 'stunts' have their advocates," but the author condemns these procedures in mild terms. It is even more sad to read that a non-contagious disease has caused "a widespread pellagrophobia; when the unhappy victim finds most hospitals closed to him, while he is *persona non grata* in hotels and boarding houses, and where even nurses seem alarmed at its mere mention, can we wonder the knowledge of its presence fills the sufferer with dire forebodings?" Wisely and strongly the author pleads for cheerful suggestion and warm hearted encouragement from the physician and reminds pessimist doctors that when nothing can be done for a disease much can be done for the patient.

F. M. S.

Martin (E. H.). **The Specific Treatment of Pellagra. The Relative Value of Sodium Arsanilate and Salvarsan.**—*New York Med. Jl.* 1913. Mar. 15. Vol. 97. No. 11. pp. 547-550.

At Hot Springs, Arkansas, the author has treated during the last four year 83 cases of pellagra, from various States. 45 are excluded "on account of the data being insufficient for certainty." Of the remainder, 11 were treated with sodium arsanilate and nine recovered after two summers, while there were two deaths, one from chronic nephritis and the other from "cerebral complications." There remain 27 cases which were treated with salvarsan; of these 20 are apparently cured, three are doubtful and four ended fatally. The author's habit is to give to each patient doses of salvarsan varying in number from five to twelve at intervals of seven to ten days. The first dose was 0·2 gramme, the second 0·4 gramme, and subsequent doses were calculated on 0·1 gramme for every 20 pounds of the unclothed patient's weight.

The author holds that both syphilis and pellagra should be treated by giving intravenous doses of salvarsan until no reaction follows, by which he means no fever, no vomiting and no bowel disturbance. He finds that pellagra cases require twice as many doses as the syphilitic, and he is firmly of opinion that the reaction which he strives to produce is due to toxins released from killed organisms. After an experience of watching the results of 1,100 intravenous injections for syphilis he states that in at least a score of cases he has seen "patients with strictly tertiary lesions and with presumably not a single spirochaete in the circulating blood, changed to secondary cases after the administration of a dose of salvarsan, as shown by the prompt appearance of the secondary eruption, which, however, would disappear after or even before the next dose."

Of the four deaths after salvarsan "there seemed to be some connection" in three of them "between the reaction and a subsequent cerebritis or meningitis." The fourth death was considered by eminent consultants to be due to alcoholism, but it seemed to the author to be caused by a pellagrous explosion. He states that

there seems to be but small choice between the two preparations of arsenic, except that sodium arsanilate must be given hypodermically during a period varying from eighteen months to two years.

He ends with an impassioned appeal to physicians of the Southern States not to continue to neglect the specific treatment in which he believes.

[There are very few clinical data and apparently no autopsies were made on the six fatal cases].

F. M. S.

Dyer (Isadore). **The Treatment of Pellagra.**—*New Orleans Med. & Surg. Jl.* 1912. Oct. Vol. 65. No. 4. p. 310.

This is a short clinical note from New Orleans, inspired by "the wholesale belief in the incurability of the disease," which fortunately the author does not share. Among his theraupeutic items are:—

"In all cases, give diet containing, *every day*, one-half to one ounce of gelatin, cooked or mixed with the food. Give also, *every day*, the juice of two or more oranges or lemons, preferably between meals. Feed the patient well with eggs, milk and well-cooked mixed vegetables.

"Keep the patient out of the sun. Indoors, best from sunrise to sundown; out of doors, before sunrise and after sundown. This rule should be absolute.

"Daily baths in tepid or warm water, with a pound of starch (potato) added.

"Medication: Quinin hydrobromate, as much as ten grains every three hours where diarrhœa and mucous membrane irritation are bad; reduce the dose as symptoms improve, but give it throughout the attack—even all summer and all winter, if any signs of disease. Two or three grains, two or three times a day, will answer as a tonic dose.

"Give arsenic, strychnin, iron and other tonics as the case may indicate. None of these are specific, and the quinin seems to be."

F. M. S.

Bodenheimer (J. M.). **A Family of Pellagrins.**—*New Orleans Med. & Surg. Jl.* 1912. Oct. Vol. 65. No. 4. pp. 319-320.

Four persons in Shreveport, Louisiana, out of two families consisting of eight individuals in one house, were found on examination to be pellagrous. All had been maize eaters, but the two husbands, who ate as much as or even more maize than their wives, showed no symptoms of pellagra. The youngest case was a baby of eighteen months who had the rash on its neck, feet and legs and slightly on the arms; also "bowel symptoms." The adults were apparently cured by five grain doses of soamin subcutaneously; a child of five years was similarly treated with three grain doses and the baby, who was fortunately still at the breast, was treated through the mother.

F. M. S.

Miscellaneous.

Illinois. **Report of the Pellagra Commission of the State of Illinois, 1911.**—250 pp. Illustrated. 1912. Springfield, Ill. Illinois State Journal Co., State Printers.

[The condensed report of this Commission has already been reviewed in this *Bulletin*, No. 6, pp. 300-301]. No less than

fifteen authors have contributed various chapters to this valuable report. Those in charge of the clinical and pathological part state that the great majority of cases showed an acute course with sudden onset. Another form is recognized in which the skin lesions disappear after a few weeks, the mouth and diarrhoea get well and yet "there is a gradual decline with increasing evidence of involvement of the nervous system until the picture becomes unmistakably that of central neuritis which ends fatally in a short time." [These are the cases which clinicians and pathologists who are unacquainted with pellagra cannot always accept as pellagra, even when they are told the previous history]. Peripheral neuritis is recognised by all as a possible sequela of diphtheria, but central neuritis is not yet universally accepted as the terminal result of severe acute pellagra. In 1901 A. Meyer described certain changes in the Betz cells of the motor cortex in a group of eight patients dying from exhaustion; these changes consisted in haziness of the protoplasm, displacement of the Nissl bodies and axonal degeneration. To this condition he gave the name of Central Neuritis. The eight patients came from the states of New York and Massachusetts and their chief symptoms were: emaciation, diarrhoea, exaggerated knee jerks, tremors, twitchings and contractions of the hands and forearms, delirium or stupor, without polyneuritis. Meyer had no knowledge of pellagra at the time and suggested that the changes were due to alcoholism or some other toxaemia. It is now thought by S. D. Wilgus and others that pellagra is one of the causes of central neuritis. The report is enriched by 24 illustrations of simulia and many tables detailing the results of many months hardwork.

The Commissioners find that the minimum standard ration for the insane should be for a man per day, 105 grammes, representing 3,150 calories, while a woman should be given 84 grammes of protein or 2,550 calories. Moreover 45 to 50 per cent. of the protein of the diet should be derived from animal foods such as meat, eggs, milk and other dairy products. They lay stress upon the diet being always varied and including an abundance of fresh fruits and vegetables and they determine that the food should be well cooked and served warm and attractively in a dining room which must be clean, well ventilated and pleasing in appearance. "Detailed study of the general diet of the Peoria State Hospital reveals a deficiency in protein constituents and especially in animal protein." It was in this asylum that 8·4 per cent. of the lunatics were pellagrous.

F. M. S.

Seppilli (G.). **Sindrome Pellagrosa da Alcoolismo.** [Pellagrous Manifestations due to Alcoholism.] — *Rivista Ital. di Neuropat., Psichiatria ed Elettroterapia.* 1912. Aug. Vol. 5. No. 8. pp. 345-347.

The Director of the Brescia lunatic asylum says that, like Lombroso and others, he has often noticed the association of pellagra with alcoholism. He now quotes two cases in which he

thinks that alcohol "independently of maize," gave rise to pellagrous symptoms.

1. A man, aged 30, in easy circumstances, the son of an alcoholic, had drunk (wine and a few liqueurs) to excess for about two years; he ate meat and other good food every day and "for years" he had not eaten polenta (maize porridge). In the second year of his eruption on hands and feet, he had loss of appetite and an acute mental condition, with confused hallucinations, which required his admission to the asylum in July. He was then found to have diarrhoea, a trace of albuminuria, tremulous hands and tongue, spastic paralytic gait and exaggerated knee jerks. In four weeks he had lost all his symptoms excepting the rash on the back of the hands.

2. A married childless woman, aged 46, one of whose brothers had committed suicide, while the other suffered from attacks of melancholia, had suffered for two years, in spring and autumn, from erythema of the hands and feet. In 1912 the rash was accompanied by giddiness, general exhaustion and loss of appetite. She ate good food of sufficient quantity and "very little maize," but she kept herself up by drinking wine and brandy. She was admitted to the asylum in July, with a history of religious delirium and hallucinations which had been present for a few days. This patient had similar symptoms to the first and, like him, lost them in the asylum. The author considers that maize food as a possible factor in the production of the symptoms in these two cases may be excluded.

F. M. S.

Santamaria (J. M.). **Some Notes on Tropical Diseases Observed in the Republic of Colombia.**—*Jl. Trop. Med. & Hyg.* 1913. Apr. 1. Vol. 16. No. 7. pp. 100-102.

It seems evident that the following disease is pellagra, associated with alcoholism.

"*Chichismo* (Josue Gómez's Disease).—In some places in the cold climate (16° C.) the lower classes have an alcoholic drink called chicha, prepared in the following manner. Indian corn (maize), after being roughly ground, is left to ferment for some days in a warm place. It is then boiled from six to eight hours, and, after being strained, is mixed with molasses and water. This liquid must ferment for three days before use. As the quantity of alcohol in it is very small, people drink from two to three litres a day.

"The intoxication by chicha is very slow and the first symptoms appear after a year of its daily use. This is evidenced by erythema, localized in those parts of the body which have been exposed to the sunshine. Later on the intellectual capacities become stupefied, the knee-jerk is lost, the joints stiffen by contraction and walking becomes difficult and characteristic. The skin hypertrophies, loses all sensibility, and a persistent diarrhœa weakens the patient, who at last shows signs of mental weakness and dies. The disease is said only to be contracted by the chicha drinkers, although in Colombia a great quantity of Indian corn (maize) is eaten."

F. M. S.

Volpino (G.). **Ricerche sulla Pellagra. (Nota Riassuntiva.)** [A Note on Pellagra.]—*Pathologica.* 1913. Mar. 15. Vol. 5. No. 105. pp. 174-176.

The author, writing from Turin, states that the reaction of hyper-sensibility, produced by the intramuscular injection of a watery extract of bad maize, supplies a diagnostic help and shows, moreover, that there is a specific connection between maize-feeding and pellagra. The aqueous extract of healthy maize produces no appreciable reaction. His experiments on forty maize-fed animals seem to show an acquired hyper-sensibility towards a substance contained in pellagrous serum, and the conveyance of a living ultra-microscopic virus, capable of developing and multiplying itself, but only in those animals which are sensitive to the action of maize. He recognizes an analogy between beriberi, scurvy and pellagra and considers all three to be due to some deficiency of nutrition. He warns observers of the possibility of mistaking typhoid, paratyphoid fever, tuberculosis, pseudo-tuberculosis or dysentery for pellagra.

F. M. S.

Reed (H. S.). **The Effect of *Diplodia Zeae* and some other Fungi upon some Phosphorus Compounds of Maize.**—*New York Med. Jl.* 1913. Mar. 22. Vol. 97. No. 12. pp. 609-611.

The author, who is Professor of Mycology of Blacksburg, Virginia, has previously called attention to the presence of a fungus, *Diplodia zeae*, upon maize and to the possibility that this may play a rôle in the etiology of pellagra. The present paper was written to show the relative presence and possible significance of inorganic phosphates in maize inoculated with pure cultures of the mould fungus, and in samples of mouldy commercial corn. The chemical methods for extracting these phosphates are described in detail. Rabbits were injected with various by-products, and some feeding experiments were also carried out without producing any ill effects upon the animals, though it cannot be positively stated that these products are altogether non-toxic. It was found that infected corn lost from 55-60 per cent. of its original weight in 200 days and 47 per cent. in 92 days, a great loss of its food value. The alteration in the amount of contained P_2O_5 is important: in the top layers of a cargo of mouldy commercial corn the inorganic phosphorus content was between 2-3 times as great as in the less mouldy sample taken from 20-50 cm. below the surface. It is possible that the mould fungi may use phosphorus compounds for their own metabolism, forming some specific compound characteristic for the particular fungus and that these phosphorus compounds if sensitive to light may have a pharmacological effect. The author suggests that the well known lesions of pellagra, which appear on portions of the skin exposed to light, might logically be due to some substance in the body of the pellagrin which is sensitive to light, and when acted on produces the local characteristic effects. This substance might be derived from the maize acted upon by the mould fungi.

F. M. S.

HELMINTHIASIS.

Bandi (Ivo). **A Contribution to the Study of Bilharziasis.**—*Jl. Trop. Med. & Hyg.* 1913. Mar. 15. Vol. 16. No. 6. pp. 84-85.

The results of an investigation carried out in Egypt in 1912 on the subject of bilharziasis are described. Material for pathological and parasitological researches were collected there and during the same year 25 cases of vesical bilharziasis were studied at Gafsa in Southern Tunis. In a sample of bilharzial urine preserved with formalin, received from Levy of Sfax, the author found in the centrifuged sediment schistosome ova with both terminal and lateral spines. These were scarce but he believes their presence is of some importance as regards the debated question whether the two varieties of ova belong to the same species of *S. haematobium* or not. Unfortunately during his sojourn at Sfax he was unable to trace the patient and so follow the case up. Referring to Conor's observations in Tunis, who saw a few cases of intestinal bilharziasis, the author states that in some of these ova of both varieties and in others only ova with terminal spines were seen.

The conclusions are that both ova with terminal and ova with lateral spines belong to the same species of *Schistosoma*, that is, that Looss's opinion is the correct one. [It is quite common to find ova with terminal and ova with lateral spines in the faeces in intestinal bilharziasis, but a rare event, or one might say an exceedingly rare event to find lateral spined eggs in the urine.]

G. C. Low.

Bassett-Smith. **Blood Determination in a Case of Katayama's Disease.**—*Brit. Med. Jl.* 1912. Nov. 2. No. 2705. p. 1208.

Blood examinations are described in a case of Katayama's disease (*Schistosoma japonicum*). The disease was contracted in June 1911 near Hankow, China, in the Yangtse Valley. The symptoms were confined to some irregularity of the bowels, followed by progressive anaemia and a certain degree of fever. The patient was sent home to England where he steadily improved. The blood counts were made during the latter part of 1911 and the early part of 1912. These showed a more or less normal red count, with a well marked increase in the leucocytes, 24,000 to 28,000. Differentially a very high eosinophilia was present, 40 to 60 per cent. During this time ova were found in small numbers in the stools. Very few clinical symptoms were then present and as the patient was feeling quite well he returned to his duties in the Navy.

G. C. L.

Gerber (Isaac). **A Case of Infection with *Hymenolepis* (*Taenia*) *nana*, the Dwarf Tapeworm.**—*Boston Med. & Surg. Jl.* 1913. March 6. Vol. 168. No. 10. pp. 346-348.

This is the first case that has been reported from New England, while up to the present only 76 cases have been reported in

America. Symptoms pointing to the gastro-intestinal tract were practically absent, the only important one being nausea. On the other hand the nervous system was much disturbed, severe headache, dizziness, convulsions, and unconsciousness all being present. This agrees with what has been found in other cases. Facial oedema, a symptom noticed before in children, was also present and must have been either toxic or inflammatory in origin. A blood count showed eosinophilia and on account of this and the other symptoms trichinosis was suspected. An examination of the faeces however exhibited many characteristic ova of *H. nana* and cleared up the diagnosis. This, as Gerber points out, is often difficult to make, as ordinarily there are no symptoms pointing to an intestinal parasite and the tapeworms themselves are too small to be noticed in the stool with the naked eye, unless present in very large numbers, as after treatment. It can therefore only be made by a microscopical examination.

The ova, or more properly speaking "onchospheres," as they contain an embryo, are easily recognised. They have a thick double capsule, within which is found the embryo containing six hooklets. At either pole is a so-called mammilate tip, from which several filamentous appendages pass off into the surrounding protoplasm (vide diagram). It is the possession of these filaments

Ova of *Hymenolepis nana* found in faeces.
× 430.

that distinguishes the ovum of the *Hymenolepis nana* from those of other members of the same genus. The adult stage of the parasite measures only from 5 to 45 mm. in length with from 100 to 200 segments. It is the smallest tapeworm known to infect man and is usually a parasite of children. Most of the cases reported have been found either by routine stool examinations, for other purposes, or by examination of the stool on a mistaken diagnosis.

In most cases the origin of the infection can be traced to food contaminated by the excrement of rats and mice. A stage in the rat, however, is not a necessary intermediate step in human infection, as infection from one person to another and also auto-infection are highly probable. The onchospheres when swallowed by rats have their capsules dissolved in the intestinal juices. The liberated embryos then bore into the intestinal villi, and there develop as the intermediate larva or cysticercus. Later these

are said to be able to reach the lumen of the intestine and develop into adult worms which in turn discharge new onchospheres with the faeces. This same process probably occurs in man though this has not yet been definitely established. The fact, however, that some cases have lasted as long as three years in spite of several apparently successful courses of treatment seems to point to auto-infection from cysticerci which have been protected from the action of the drugs used. The only drug effective in the treatment is male fern.

G. C. L.

Thiry (G.). **L'Anguillule Stercorale *Strongyloides stercoralis* (Bavay, 1877), chez les Mineurs de Fer de la Lorraine.**—*Compt. Rend. Soc. Biol.* 1913. Mar. 7. Vol. 74. No. 9. pp. 500-501.

In 1909-1910 the author conducted an enquiry into ankylostomiasis in the iron mines of Lorraine. He examined twenty per cent. of the miners in thirteen mines, at Briey, Longwy and Nancy, in all a total of 745 people. Of this number 1·209 per cent. had ankylostome eggs, and 0·940 per cent. embryos of *Strongyloides stercoralis* (Bavay, 1877), *i.e.*, 7 out of the 745. He believes the infection was introduced from abroad by a Frenchman who had travelled in China and by six Italian miners. Of the latter one had been on a coffee plantation in San Paolo, Brazil, and harboured ankylostomes also. Thiry notes the fact, commented on by Perroncito in 1880, that strongyloides and ankylostomes are often found together in the same person. The parasite is apparently not indigenous in France, its introduction from without being specially emphasised.

G. C. L.

Johnson (L. F.). **Hookworm Disease. Pathology and Diagnosis.**—*Texas State Jl. of Med.* 1913. Mar. Vol. 8. No. 11. pp. 303-305.

The author began to study ankylostomiasis four years ago, and since that time has investigated 241 cases. He describes some of these under the headings, typical and atypical. The symptoms of some of the latter were very obscure and the diagnosis was only cleared up by the discovery of the characteristic ova in the faeces. For finding these, centrifuging the faeces with water or the use of Bass's method is recommended.

[This method, which is a valuable one, is as follows:—A quantity of faeces is well diluted with water, 1:10, and strained through gauze to get rid of coarse particles. It is then centrifuged and the fluid poured off, the centrifuge tube being refilled and centrifuged again until all the diluted faeces have been used. The precipitate is rewashed several times with water as long as anything can be washed out. Calcium chloride solution of a specific gravity of 1050 is now added and the precipitate washed as before. This salt, which was suggested by Metz, is preferable to others

because of its hygroscopic properties, and its addition to the faeces disposes of everything having a specific gravity below 1050. The precipitate is now examined, and will be found to contain most of the eggs which were present in the original amount of faeces used and may all be put on one slide for examination. One such slide contains as many eggs as can be found in several hundred ordinary slide preparations of faeces. In some instances, after washing with the calcium chloride solution, a considerable amount of material, much of which is heavier than the eggs and of such a character that it interferes with their recognition, may be present. In such a case, this material may be removed by centrifuging with a fluid of greater weight than the eggs. A solution of calcium chloride with a specific gravity of 1250 is very satisfactory, the eggs going to the top in this and other material to the bottom. For examination a few drops from the surface may be removed and examined with an appropriate pipette or some of the top fluid containing the eggs may be poured off, diluted with water to bring the specific gravity below 1050, and centrifuged again.*]

G. C. L.

Peiper (Otto). **Über den Infektionsmodus der Ankylostomiasis in Deutsch-Ostafrika.** [On the Mode of Infection in Ankylostomiasis in German East Africa.]—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1912. Oct. Vol. 16. Beiheft 6. 34 pp. [pp. 537-570.]

In this paper the author gives the results of a series of carefully carried out observations which he conducted for the purpose of determining how the ankylostome enters the human body in German East Africa. For this purpose he examined sand, earth contaminated with bath water, drinking water, earth from latrines, etc., and noted whether or not larvae were present. As a result of these examinations he concludes that earth or mud eating is not a factor in the production of ankylostomiasis, because the earth, after its preparation, cannot be seen to be infected. The earth contains no salt; therefore it is not consumed for that reason.

In a certain small percentage of cases infection takes place by the mouth by the drinking of water containing larvae, or by the use of raw vegetables, but the usual mode of infection is undoubtedly by way of the skin, the larvae being either brushed off the damp grasses, or taken up from the infected soil by the feet.

The author details certain steps, based on his results, which he thinks should be adopted for the prophylaxis of the disease in German East Africa. Amongst the most important of these are the proposal of a monthly or quarterly examination of the soldiers, police, carriers, servants and natives generally, periodical disinfection of latrines with milk of lime or hot water, and a gradual training of the natives in order to make them develop more sanitary habits.

G. C. L.

---

* See *Archives of Internal Medicine.* 1909. June. Vol. 3. p. 446.

Bass (Charles C.). **The Human Intestinal Parasites Common in the United States.**—*Interstate Med. Jl.* 1912. Vol. 19. No. 3.

The author briefly discusses the intestinal worms commonly infecting man in the United States. Of nematodes *Strongyloides intestinalis, Trichuris trichiura, Ascaris lumbricoides, Oxyuris vermicularis* and *Necator americanus* were met with. As regards tape worms practically only two varieties occur in the United States, *Taenia saginata* and *Hymenolepis nana. T. solium* and *Dibothriocephalus latus* though rare have, however, been found. The usual methods for examining the faeces are given. These are the direct microscopical examination or the method of examination after centrifuging. [See above.]

G. C. L.

Jamison (Stanford Chaillé). **Intestinal Parasites in Costa Rica.**—*Jl. Trop. Med. & Hyg.* 1913. Mar. 1. Vol. 16. No. 5. pp. 69-70.

Of 210 patients examined only 42 gave negative results. The majority of these negative stools were subjected to not less than three careful examinations, and the centrifugal method was repeatedly used. A few of the cases, however, left the hospital before more than one examination could be made. Of the patients about whom data were obtained, fourteen had been in Costa Rica less than one year, nine between one and five years, four for life, while in twelve cases of Jamaica-born negroes the length of residence could not be obtained, though it was probably less than five years. Eleven were Americans and English who had been in the country less than a year; six were negroes from the island of St. Kitts resident for less than three years; nineteen were negroes from Jamaica resident for a few months to 25 years, and four were native-born Costa Ricans who had never been out of the country. Of this number 169 cases or nearly 80 per cent. were positive for some intestinal parasite. *Trichuris trichiura* was by far the most common infection, but in addition *Strongyloides intestinalis, Necator americanus, Ascaris lumbricoides* or *Oxyuris vermicularis* were met with. Many of the cases harboured more than one of these parasites. [Apparently cestode and trematode eggs were never met with; no information as regards the presence or absence of *Ankylostoma duodenale* is given.]

G. C. L.

Millous (P.). **Helminthiase intestinale à Thanh-hoa.**—*Bull. Soc. Méd.-Chirurg. de l'Indochine.* 1913. Mar. Vol. 4. No. 3. pp. 157-158.

The author has examined 1,000 stools of natives of the province of Thanh-hoa, Indo-China. The results are very similar to those obtained by Mathis and Leger in North Annam, but shew on the whole a feebler infection. The latter observers found distome eggs in two out of 45 examinations, but Millous did not encounter

such eggs in any of his cases. The two tables reproduced below demonstrate his results at a glance.

Association of parasites.

Months of 1912.	Number of stools examined.	Number of persons infected.	Percentage of persons infected.	Stools containing parasites.									
				418 containing 1 parasite.				137 containing 2 parasites.				14 containing 3 parasites.	3 containing 4 parasites.
				Ascaris.	Trichocephalus.	Ankylostome.	Oxyuris.	Ascaris trichocephalus.	Ascaris ankylostome.	Trichocephalus ankylo tome.	Ascaris oxyuris.	Ascaris, trichocephalus, ankylostome.	Ascaris, trichocephalus, ankylostome, oxyuris.
August ...	97	22	23	6	1	2	1	1	6	—	—	4	1
September	70	38	54	10	6	6	—	4	4	3	—	4	1
October ...	92	53	69	14	3	11	—	6	13	6	—	—	—
November	346	201	56	96	53	16	—	21	9	3	—	3	—
December	405	258	63	118	63	9	3	46	12	—	3	3	1
Total ...	1,010	572	57	244	126	44	4	78	44	12	3	14	3

Monthly distribution.

—	Number of persons examined.	Ascaris.		Trichocephalus.		Ankylostome.		Oxyuris.	
		No.	Per cent.	No.	Per cent.	No.	Per cent.	No.	Per cent.
August ...	97	18	18	7	8	13	14	2	—
September ...	70	23	32	18	25	18	25	1	—
October ...	92	33	35	15	16	30	32	—	—
November ...	346	129	37	80	23	31	11	—	—
December ...	405	183	45	113	27	25	6	7	—
Total ...	1,010	386	39	233	23	117	11	10	1

[The figures in Table I are not correct in the original; they have been revised and corrected in the translation.]

G. C. L.

Schüffner (W.) & Vervoort (H.). **Das Oleum chenopodii gegen Ankylostomiasis und eine neue Methode der Wertbestimmung von Wurmmitteln.** [Oleum chenopodii for Ankylostomiasis and a new Method of Estimating the Value of Vermifuges.] —*Münchener Med. Wochenschr.* 1913. Jan. 21. Vol. 60. No. 3. pp. 129-131.

Oleum chenopodii anthelmintici is a volatile oil prepared from *Chenopodium anthelminticum* L., a member of the Nat. Ord. Chenopodiaceae, and is official in the U.S. Pharmacopoeia. It has been

used there in the treatment of round worms in a dose of 3 minims, given either on sugar or made up in an emulsion. The authors after experimenting with thymol, naphthol, oleum eucalypti, and oleum chenopodii in the treatment of ankylostomiasis have reached the conclusion that the latter is more energetic in its action than any of the others. Its only disadvantage is its price, the cost for a single cure being double that of thymol and eucalyptus and four times that of naphthol. They gave it in doses of 16 minims, three times repeated, in the course of two hours and followed this up with a dose of castor oil and chloroform two hours after the last dose.

G. C. L.

Artault (S.). **Le Thymol contre le Taenia.**—*Bull. Général de Therapeutique.* 1913. Feb. 23. Vol. 165. No. 7. pp. 267-269.

A course of thymol is recommended for the expulsion of taenia. Cachets containing 25 centigrammes are given in the morning on an empty stomach, for some days. The worm is usually expelled on the third or fourth day, but in order to make absolutely certain the treatment is carried on until the eighth day. The procedure is simple and the patients bear the drug perfectly. Up to the present the author has treated 23 cases by this method, in all of which the taenia was expelled without any recurrence. During the treatment all alcohol is stopped.

G. C. L.

Herrick (W. W.). **Experimental Eosinophilia with an Extract of an Animal Parasite. Its Relation to Anaphylaxis and certain Clinical Problems.**—*Arch. Internal Med.* 1913. Feb. 15. Vol. 11. No. 2. pp. 165-186.

The functions of the eosinophile cells remain one of the mysteries of biology and little is known of the role they play in the economy of the body. The problems towards which the author directed his attention were as follows:—

"1. Whether eosinophilia of the blood could be produced experimentally by the use of an extract of *Ascaris lumbricoides*. 2. Under what conditions of administration of this extract such eosinophilia might be brought about. 3. Whether or not the substance influencing the eosinophils is a protein. 4. Whether such eosinophil increase bears any relation to specific sensitization or anaphylaxis." Throughout the work the possible relationship of these questions to the clinical problem of bronchial asthma was also kept constantly in mind.

After a long series of experiments with guinea-pigs and numerous blood examinations, the author has reached the following conclusions:—

"1. A notable eosinophilia of the blood can be developed by the intraperitoneal injection of an aqueous extract of *Ascaris lumbricoides*.

"2. The substance causing such eosinophil increase is a protein.

"3. Previous sensitization is necessary to the development of this eosinophilia.

"4. It is impossible to produce such eosinophilia while the animals are immune to the extract.

"5. This eosinophilia may therefore be considered evidence of previous sensitization.

"6. There is a possible association of these facts with the problem of bronchial asthma."

G. C. L.

Weinberg (M.). (i) **Helminthic Toxins.**—*Brit. Med. Jl.* 1912. Nov. 2. pp. 1206-1207.

(ii) **Toxines Vermineuses. Rapport présenté au Premier Congrès International de Pathologie Comparée** (Paris, Octobre 17-23 1912).—*Bull. Inst. Pasteur.* 1912. Nov. 30. Vol. 10. No. 22. pp. 969-977; Dec. 15. No. 23. pp. 1017-1026; & Dec. 30. No. 24. pp. 1065-1072.

Weinberg writes that the studies of many French and foreign authors, on the part played by intestinal parasites in the etiology of appendicitis and of infectious diseases in general, have established definitely: (1) that helminths inoculate microbes into the wall of the intestine or into the organs they penetrate and (2) that the frequency of such inoculations and the seriousness of the infection set up depend mainly on the buccal structure of the parasite and the nature of the host's intestinal flora. The importance of these researches caused some neglect of the study of the secretion, by the parasites, of toxins and the reaction of the organism following on their absorption. Von Linstow, E. Perroncito and R. Blanchard brought before the eighth International Veterinary Congress (Buda Pest 1905), a number of facts in support of the toxic action of intestinal parasites, but precise data on this subject have been gathered only within the last few years.

Clinicians established the first knowledge of the toxic action of helminths. By careful study of certain cases they shewed, by methods of elimination, that symptoms such as anaemia and eosinophilia could only be explained by the presence of the numerous worms with which the patients were infected. Experimental research has confirmed clinical evidence and there exists now a collection of definite facts which shew that the parasites do secrete in truth poisonous products. The proofs of the existence of these toxins can be grouped into:

(i) *Indirect proofs*—By this is meant all the experimental and anatomo-clinical evidence which shew that the presence of intestinal worms is accompanied by certain changes in the organs and blood of the patient.

(ii) *Direct proofs*—obtained by researches on the toxic action of extracts of the parasites and especially of fluids secreted by the parasites, *e.g*, hydatid and cysticercus fluids, the perienteric fluids of Ascarids, and the fluid of *Coenurus serialis*. These fluids, when proper precautions are taken, can be procured free of foreign matter and absolutely sterile. Weinberg gives an exhaustive summary of the records of experimental work and

clinical observation on the nature and action of helminthic toxins. He describes and reviews these researches, including his own, under the headings—Indirect Proofs, Direct Proofs, Haemotoxins, Toxicity of Fluids from Parasitic Cysts, Ascarid toxins, Taenia toxins, and Bactericidal Properties of Helminths.

Some authors have denied the existence of helminthic toxins on account of the fact that some carriers of filariae and bilharzia appear to enjoy good health. We, however, possess very little knowledge of the biological reactions of the blood of these subjects. It is more than probable that helminths in the human blood produce harmful effects on the host. It can no longer be doubted that all helminths secrete substances that have a toxic effect on the organism of the host. According to the parasite, so its secretion differs in its degree of toxicity and its mode of action. The lesions provoked depend not only on the number of parasites, their localisation and the amount of toxin absorbed, but also on the individual sensitiveness of each subject infected.

The helminthic toxins have in common the property of acting on the haemopoietic organs.

Helminthiasis is above all characterised by the existence of a more or less intense poisoning of the host organism by toxic parasitic products.

Besides this poisoning there occur also symptoms appropriate to each species, according to the localisation of the worms in different organs and their manner of attachment.

There were the functional troubles set up when the parasites occupied certain situations; the mechanically produced lesions, often considerable, due to parasites with powerful buccal armature, and finally the microbial infections, sometimes fatal, in the production of which intestinal worms often played an indisputable part.

Serious as these accidents are, they are only secondary complications which serve to mask in some cases the symptoms of helminthic poisoning.

H. M. Hanschell.

Erratum.

Bulletin No. 8 (February 28, 1913), p. 432, line 11 from top, and p. 440, line 3 from bottom, for *Schistosomum* read *Schistosoma.*

CHOLERA.

Archibald (R. G.). **A Case of Choleraic Diarrhoea caused by an Organism of the *Bacillus Proteus* Group.**—*Jl. R. Army Med. Corps.* 1913. Feb. Vol. 20. No. 2. pp. 157-161.

The stools of a case with severe intestinal symptoms greatly resembling cholera gave no vibrios but almost pure cultures of a short Gram-negative motile non-sporing bacillus, which did not ferment lactose, cane-sugar, dulcite, adonite, inulin or raffinose, but produced acid and gas in glucose, mannite, laevulose, maltose, galactose and dextrin. Milk was at first turned acid without clot formation, but by the 3rd day became and remained alkaline; Voges-Proskauer reaction positive; blood-serum not liquefied. It was pathogenic for guinea-pigs and rabbits intraperitoneally (0·2 cc. of broth culture killing a rabbit in 12 hours with intense local congestion). Subcutaneously and orally it was not virulent for either. The patient's serum did not agglutinate this or any other organism of the typhoid-colon group. The cultures had an offensive odour, gave a strong indol reaction, and on Drigalski-Conradi showed fluorescence. The writer looks on this organism as an aberrant member of the *B. proteus* group.

J. Henderson Smith.

Mancini (Stefano). **Ueber einen mit Cholera komplizierten Fall von Paratyphus B.** [Case of Paratyphoid B. Infection complicated by Cholera.]—*Wien. Med. Wochenschr.* 1913. Mar. 15. Vol. 63. No. 12. pp. 751-752.

An account of a case which at first presented the symptoms of an intestinal infection of uncertain nature, but of which the serum agglutinated Paratyphoid B. in dilution of 1/600 (not typhoid, coli or para-typhoid A.). Subsequently symptoms of cholera appeared and the patient died of the latter disease. The first signs of cholera appeared 9 days after the earlier condition had developed, and Mancini believes he can exclude any infection with cholera for the 7 days preceding its appearance. He accordingly thinks the patient must have been a cholera carrier and that the disturbance of the intestinal equilibrium by the Paratyphoid attack brought about the development of the vibrios. The cholera diagnosis was confirmed by the isolation of the culturally and serologically typical vibrios from the stools: the patient's serum never agglutinated them. The first symptom of the new invasion was the drop in temperature, and it is of interest to note that shortly before this symptom appeared the number of red corpuscles had fallen from 3,820,000 one week previously to 2,300,000, possibly from haemolysis, and the leucocytes rose from 6,450 to 12,000.

J. H. S.

Csernel (Eugen). **Beiträge zur sogenannten Mutation bei Cholera-vibrionen.** [On the So-called Mutation of Cholera-Vibrios.] —*Centralbl. f. Bakt.* 1. Abt., Orig. 1913. Mar. 1. Vol. 68. No. 2. pp. 145-150.

The author, who did not obtain the regular correspondence between type of colony and morphology of organism described by Baerthlein, looks upon the differences in different colonies on one and the same plate as evidence of degenerative changes rather than a genuine mutation. The same changes occurred later on plates which at first showed colonies of only a single type, and the only difference between the mutative and the degenerative changes, according to the author, lies in the time of their appearance. Papillae were observed on old cholera plates.

J. H. S.

Mazzetti (Loreto). **Beitrag zum Studium des Stoffwechsels der Choleravibrionen.** [On the Metabolism of the Cholera Vibrio.]—*Centralbl. f. Bakt.* 1. Abt., Orig. 1913. Mar. 1. Vol. 68. No. 2. pp. 129-145. With 3 figs.

A systematic study of the nitrite and indol production of cholera vibrios. In simple peptonised water cholera will produce in 48 hours much more nitrite than could be obtained from any nitrate impurity in the medium. The presence of nitrates favours very markedly the nitrite production, but within the limits of 0·25 to 1·0 gr. nitrate per 100 cc. the amount of nitrite produced is independent of the quantity of nitrate, and larger amounts reduce the nitrite yield, apparently by checking the full growth of the organisms. A recently isolated strain was a much more efficient reducer of nitrates than one long out of the body.

The addition of nitrite to the medium does not prevent the further production of nitrite, in part perhaps derived from the nitrates contained in the nitrite solution added; but if the addition reaches a certain limit, the organisms produce no more although they still develop and produce indol. Addition of both nitrite and nitrate at the same time does not prevent a further production of nitrite, the amount of this production, however, being within limits inversely proportional to the nitrite added, and does not much exceed the amount produced when no nitrates are present.

Indol is demonstrable in simple peptone water in 6 hours and reaches a maximum in 42 hours. Its presence, however, cannot be demonstrated in solutions which contain nitrate to more than 0·4 per cent. or nitrite to more than 0·25 per cent. If the red colour has already been elicited in a culture, the addition of nitrate does not destroy it, but on addition of nitrite the colour disappears. The distillate of peptone-water cultures gives the indol reaction, although no nitrite can be found by the reaction of Gries.

J. H. S.

Pane (Domenico). **Vitalità del Vibrione del Colera a contatto con gli Acidi.** [Viability of Cholera Vibrios in contact with Acids.]—*Riforma Medica.* 1913. Feb. 22. Vol. 29. No. 8. pp. 197-198.

During the 1911 Naples epidemic Pane noticed that the alkaline character of the stools usually found in carriers or convalescents disappeared with the disappearance of the vibrios. Only rarely were vibrios present when the stools were acid, though in one case of a carrier the acid reaction was intense. Growth of cholera in peptone water is inhibited by the presence of sufficient acid. Mineral acids are about equally effective in this respect, but organic acids are some much more and some much less effective than mineral acids. No increased resistance to the action of acid was obtained by growing the organisms for a month in peptone-water to which acid had been added in quantity just too small to stop the growth. The vibrios may remain alive in peptone-water containing acid enough to prevent multiplication, *e.g.*, in HCl or caprilic acid, and the viability is considerably increased by the presence of fats, which according to Pane act mechanically by forming a protective envelope or coating round the organisms.

J. H. S.

de Bonis (V.) & Natale (P.). **Immunizzazione delle Cavie col Nucleo-proteide dei Vibrioni colerigeni per la Via gastrica.** [Immunisation of Guineapigs by Oral Administration of Cholera Nucleoproteid.]—*Riforma Medica.* 1913. Feb. 8. Vol. 29. No. 6. pp. 141-143.

A preparation of nucleoproteid was made from virulent cholera vibrios, grown for a few days in broth at 37° C., by adding to the culture caustic potash up to 1 per cent., acidifying with acetic acid, precipitating with ammonium sulphate and after washing the precipitate drying it over sulphuric acid. Given intraperitoneally the culture killed 2 kilo. rabbits in a dose of 0·1 cc. of 24 hour broth culture, and 1 mgr. of the nucleoproteid killed 250 gr. guineapigs. Dissolved in 0·5 per cent. sodium bicarbonate the nucleoproteid was given to 11 guineapigs by the stomach through a sound. The quantity given at one time varied from 0·5 to 2 cgr., and the intervals between injections varied from a few days to a month. Six animals received 3 injections in all, 3 received only 2 injections, and 2 only one injection. Of the 11 guineapigs 6 died within 10 days of the last injection, 2 survived (both having received 1·5 cgr. in 3 injections), and the other 3 died 15, 23 and 36 days respectively after the last injection. The serum of 9 of the animals contained agglutinin, the highest titre obtained being 1/1000 in 2 animals and 1/500 in 4 animals. The 2 animals which survived were given 0·25 cc. of a 24 hour broth culture and both survived, a control animal dying in 48 hours.

J. H. S.

Nijland (A. H.). **Weder eenige Resultaten met het Choleravaccin Verkregen.** [Further Results with Cholera Vaccine.]—*Geneesk. Tijdschr. v. Nederlandsch.-Indië.* 1913. Vol. 53. No. 1. pp. 1-12.

The statistics which have been hitherto published of the results obtained with cholera-vaccine in the Dutch East Indies have been all highly favourable, with a single exception. Leopold at Stagen (Borneo) found a higher percentage of cases among the vaccinated than the unvaccinated. The explanation of this aberrant result is now supplied by Nijland, who ascertained that not only were the figures actually given inaccurate (as is admitted by Leopold) but that the arrangements for carrying out the inoculations were inadequate. Attempts are constantly made by the natives to get their names on the register as inoculated without their having been vaccinated at all, and offers are made to bribe even European officials. The extent to which this evasion is attempted may be inferred from the instance of a convict prison, where a system was adopted of secretly marking the skin of each person as he was inoculated. Among one group of 500 persons, who were not inoculated and did not carry this mark, as many as 40 were found when brought up for vaccination to have simulated the mark made by the iodine and needle prick of the usual technique. Statistics therefore may be very misleading, unless special care is taken to prevent any evasion, and the Stagen figures are quite unreliable. Nijland gives further unpublished figures with respect to cholera vaccination. In a convict quarter at Glodok, of 2,400 persons 45 took cholera in 1911 (when vaccination was imperfectly carried out), and 30 died; while in 1912 (after thorough vaccination) only 2 cases occurred with 1 death, although elsewhere the disease was equally prevalent in the two years. Among the European population of Batavia, 8,000 persons were vaccinated, among whom 3 cases occurred (one developed the disease 2 days after inoculation and died), while among the 2,700 unvaccinated 32 cases occurred with 15 deaths.

J. H. S.

Segale (Mario). **Ricerche Anatomopatologiche, Batteriologiche e Biochimiche su tre Feti di Colerose.** [Pathological, Bacteriological and Biochemical Examination of three Foetuses of Choleraic Mothers.]—*Pathologica.* 1913. Apr. 1. Vol. 5. No. 106. pp. 200-204.

In three cases Segale examined the foetuses delivered dead from mothers suffering from rapidly fatal cholera. One of these was a primipara, the others multiparae, and in all three pregnancy had passed the 8th month. There was reason to believe that in all the foetus was not long dead at the time of delivery and that the material was fairly fresh. Cultures were made from the foetal blood in two cases and from the intestine in all, but they remained sterile. The chief points observed by post-mortem and histological examination were subpleural and subpericardial ecchymoses in all of the cases, marked degenerative changes in the

liver and kidneys, haemorrhage or haematoma in the suprarenals and some clear watery fluid in the intestine. The serum in 2 cases was extremely toxic, 0·25 cc. killing a guineapig in less than half an hour; the freezing point of the serum and its refractive index were lowered. Segale considers that the facts point to an intoxication of the child by poisonous products elaborated in the mother, with possibly an added asphyxia due to the congested condition of the maternal organs. There was no evidence of an infection of the foetus by the vibrios in any case.

J. H. S.

Schiavone (A.) & Trerotoli (G.). **Sull' Azione dei Raggi Ultravioletti sui Vibrioni del Colera e sui Bacilli della Peste.** [Action of Ultra-Violet Rays on Cholera Vibrios and Plague Bacilli.] — *Riforma Medica.* 1913. Mar. 15. Vol. 29. No. 11. pp. 288-291.

A dense emulsion of cholera vibrios in various suspension fluid was exposed in a layer 2-3 mm. thick to the action of a mercury lamp (Haereus pattern, Westinghouse make), worked with a tension of about 75 volts at about 20 c.m. distance from the organisms. The fluids used were physiological saline, broth, urine, milk, and blood serum. Samples were withdrawn from time to time and inoculated on broth or agar. Cholera was killed in about 1 minute in saline, but in the fluids containing organic matter the time required for sterilisation was much longer, viz., 30 min. in serum, and 2 hours or more for urine, milk, and broth. (Plague bacilli were killed in 6 to 10 min. in saline, in 15 min. in broth, 1½ hours in urine, 2½ in milk, and over 3 hours in serum.) Small pieces of cotton or wool dipped in salt solution emulsions of the organisms were readily sterilised, especially if first the one side of the material and then the other was exposed to the rays (time about 5 to 15 mins.). These experiments do not support the contention that the use of ultraviolet rays is a practical method of sterilising colloidal or organic fluids.

J. H. S.

Kraus (H.). **Ueber Massnahmen zur Bekämpfung der Cholera auf dem bulgarischen Kriegsschauplatz.** [Cholera Measures on the Bulgarian War Front.]—*Wien. Klin. Wochenschr.* 1913. Feb. 13. Vol. 26. No. 7. pp. 241-247.

Towards the middle of November the Third Bulgarian army was attacked at the Tschataldja lines by an epidemic of intestinal disease. The epidemic was of extremely sudden onset, and by the 18th November the total number of cases had reached 17,000 with 900 deaths, and by 30th November, 29,626 cases with 1,849 deaths. Cholera vibrios were found in the stools and identified by cultural and agglutination tests, and no other pathogenic organisms were met with; but Kraus considers that the low mortality of 6 per cent. makes it certain that not all of these cases can have been cholera and that many were simply enteritis

due to chill or imperfect food supply. What proportion of the cases were really cholera cannot be determined from the relatively small number of cases examined. Whatever its nature the epidemic appears to have been water-borne, but in the hospitals for the wounded sporadic cholera cases were occurring all the time.

Kraus's expedition, which was meant to organise the sanitary arrangements on the Bulgarian side, started only on the 19th November when the epidemic was already at its height. His first step was to establish a series of diagnosis laboratories, of which nine were set up between the front and Sofia. Then he tried to limit the spread of the epidemic. The use of unboiled water was forbidden, first to the troops at the front and later to the other troops; and some attempt was made to segregate the sick and the wounded into two main groups. The first division was made at the front, the severely wounded being drafted into hospitals reserved for wounded only, and the sick into separate hospitals. Naturally it was impossible to examine all the wounded to see whether they were carriers or not, and sporadic cases of cholera kept occurring in the hospitals for the wounded. This risk of contact-infections, with the danger of invalided soldiers carrying the disease through the whole country, was so serious, that eventually all the wounded were vaccinated against cholera as a routine measure.

Civil cases began in the first part of December, but the epidemic subsided very quickly towards the middle of the same month. To what extent this can be attributed to the measures taken does not appear from the sketch given in this paper, and the effects of the treatment adopted will no doubt be adequately considered later on. Kraus is so afraid of a recrudescence of the epidemic in summer that he has strongly urged the vaccination of the whole Bulgarian population in spring. Certain facts of importance for military hygiene come out clearly even in this paper. In particular, the urgent necessity of diagnosis laboratories up at the front, if the current view of the nature of cholera epidemics is maintained, is emphasised, and above all the necessity of making preparations during peace for the inevitable epidemics of war.

J. H. S.

VAN DIJKEN (H. W. J.). **De Behandeling der Choleralijders in het Militair Hospitaal te Weltevreden tijdens de laatste Epidemie.** [Treatment of Cholera Patients in the Military Hospital at Weltevreden during the last Epidemic.]—*Geneesk. Tijdschr. v. Nederlandsch.-Indië.* 1913. Vol. 53. No. 1. pp. 32-52.

24 cases of cholera in the algid state were treated solely by intravenous injections of hypertonic salt solution (Rogers' formula), with 9 deaths, *i.e.*, 37·5 per cent. Full details are given and the author is very favourably impressed by the method of treatment.

J. H. S.

DYSENTERY.

Amoebic Dysentery.

Carini (A.). i. **Phagedenismo Cutaneo Amebico.** [Amoebic Phagedaena of the Skin.]—*Rev. Med. de S. Paulo.* 1912. Aug. 31. Vol. 15. No. 16. pp. 315-316.

ii. **Um outro Caso de Phagedenismo Cutaneo Amebico.** [Another Case of Amoebic Phagedaena of the Skin.]—*Ibid.* pp. 316-317.

An Italian engineer, aged 37, fell ill with the usual symptoms of liver abscess. After the symptoms had continued for three months the abscess was opened in hospital in the usual manner, and in the pus numerous motile amoebae were found. A week afterwards a second abscess was evacuated. The skin round the operation wound soon took on an unhealthy appearance, becoming dark grey in the centre of the area with a zone of inflammation outside. Fistulae formed in the subcutaneous tissue, from which there exuded, on pressure, a chocolate-coloured pus similar to that of liver abscess. Gangrene of the skin followed over a surface measuring 5 × 10 centimetres, and the whole of this infected area was ultimately dissected off down to the level of the muscles by the surgeon in attendance, leaving an oval wound measuring 16 × 15 centimetres with the original operation wound in the centre. The surface was then dressed with a solution of sulphate of quinine. With this the denuded area soon took on a healthy action in spite of a continual discharge of pus from the original liver abscess. The patient eventually recovered with a large cicatrix. The author finds by enquiry that this complication of liver abscess is not unknown to surgeons practising in Brazil, though it receives but scanty notice in books. It is generally regarded by the local surgeons as a very fatal complication.

ii. The author since the date of his first communication has come upon a second case of the same affection. The patient was only seen a few hours before death.

An Italian labourer, aged 30, suffered for about a year with persistent bloody dysentery, loss of flesh and fever. A large abscess eventually was located in the right lobe of the liver, and was opened. After the operation the state of the patient continued bad, from persistence of the dysentery. Two or three weeks after the operation the surgeon in attendance noticed that the edges of the wound had assumed a dark grey tint and had begun to necrose. At the reporter's visit, a week after the supervention of the complication, ulceration of the skin had extended over an area of 10 × 8 centimetres. Gangrene had penetrated down to the muscles and the patient was in extremis.

Smears of pus taken from the affected areas in both these cases, and stained, showed amoebae presenting the characters of *Amoeba tetragena*, while sections of the skin revealed the further presence of the same parasite.*

S. R. Douglas.

---

* This case would appear to be that described in this *Bulletin*, No. 8, p. 455.

Pfletschinger (F.). **A Case of Amebic Colitis.**—*The Post Graduate.* 1913. Jan. Vol. 28. No. 1. p. 54.

An account of a case showing symptoms of dysentery and hepatitis, but in which repeated examinations of the stools failed to show amoebae.

The patient at first improved under general treatment, but a relapse occurred, and on again examining the stools amoebae were found. Treatment with salol-coated ipecacuanha pills was then commenced, the doses given being 60 to 10 grs. of ipecacuanha, and the patient rapidly recovered.

S. R. D.

Paviot (J.) & Garin (Ch.). **Étude sur la Dysenterie Amibienne Autochtone.**—*Jl. de Physiol. et de Pathol. Générale.* 1913. Mar. 15. Vol. 15. No. 2. pp. 342-350.

The account of a fatal case of amoebic dysentery in a patient who had never been out of France, and who had never served in the army, is given.

Amoebae were discovered in the stools, both free and encysted, in large numbers. Two kittens were injected per rectum with the stools containing amoebae: one of these died 22 days afterwards with all the symptoms of dysentery, amoebae being found in the stools from the third day after the injection, the symptoms of dysentery not appearing till the tenth day; the other kitten did not develop any symptoms of dysentery, but amoebae were found in the stools from the fourth to the twelfth day after the injection.

At the commencement of the paper references are given to several cases in which the patients suffered from amoebic dysentery although they had never been out of Europe.

The case described by the authors is the fourth that has been observed in Lyons.

S. R. D.

Field (F. E.). **Notes on a Case of Liver Abscess.**—*British Guiana Medical Annual for* 1911. Part 2. p. 72.

An account of a case of liver abscess seemingly not due to amoebae.

There was no history of dysentery or injury but the patient, a negro aged 40, stated that he had had syphilis; pain in the abdomen had been a constant symptom for eighteen months, sometimes so severe as to make manual labour impossible and had become much more severe after a strain.

The abscess was opened and recovery was rapid; no amoebae or micro-organisms were discovered in the pus.

S. R. D.

Abbatucci. **Le Signe du "Flot transthoracique" et les grands Abcès du Foie.**—*Ann. d'Hyg. et Méd. Colon.* 1912. Oct.-Nov.-Dec. Vol. 15. No. 4. pp. 856-858.

Chauffard described, as occurring only in cases of hydatid cysts of the liver, a sign which he named *Flot transthoracique*

this being obtained by placing the left hand on the posterior surface of the thorax and percussing gently with the right hand over the enlargement of the liver; in such cases a thrill was felt. The author describes this sign as occurring in an amoebic abscess of the liver which was remarkable for its large size and for the very fluid pus (two and half litres) that it contained.

S. R. D.

Turner (Philip). **Abscess in the Left Lobe of the Liver Ten Years after an Abscess in the Right Lobe.**—*Proc. Roy. Soc. Med.* 1913. Feb. Vol. 6. No. 4. Clin. Sec. pp. 89-90.

The account of a case of recurrent liver abscess, the most noteworthy points being that the first abscess occurred six years after the patient's return to England from the tropics; this abscess was opened and drained and then, after an interval of ten years, a further abscess developed in the left lobe of the liver which was again treated successfully by surgical measures.

No examination of the pus was made for amoebae, no bacteria were found, and no history of dysentery could be obtained.

S. R. D.

Chauffard. **Kyste Hydatique suppuré du Foie. Abcès Dysentérique Amibien du Foie terminé par Vomique.**—*Jl. des Practiciens.* 1913. Feb. 22. Vol. 27. No. 8. pp. 113-114.

The history of two cases, one of a hydatic cyst of the liver, the other of an amoebic abscess of the liver (see below) in both of which the pus was evacuated through a bronchus. The differential diagnosis is discussed at length.

S. R. D.

Treatment.

Waldow. **Uzara, ein neues Heilmittel bei Darmerkrankungen.** [Uzara, a New Remedy for Bowel Complaints.]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1913. Feb. Vol. 17. No. 4. pp. 126-130.

In the same periodical (1912, Vol. 16, No. 6, p. 190) the writer along with Gühne made a preliminary report on the use of Uzara in tropical bowel complaints. The pharmacology of the drug has been described by Gürber [reference not given]. Further experience has shown this remedy to be extremely useful and almost a specific in the treatment of dysentery. In the Cameroons dysentery is extremely fatal to natives, so that evidences of it are often found at post mortem examinations. It is, in fact, more deadly than sleeping sickness. Europeans are also very subject to it. Malnutrition and an unwholesome diet are important exciting causes, in the negro, of both amoebic and bacillary dysentery. Clinically, cases of the former exhibit in the stools not only actively moving amoebae but also the motionless, polynuclear and budding forms which are generally regarded as non-pathogenic. The latter have, however, been detected in a

liver abscess by LÖHLEIN, whence the conclusion that here, as in other cases under favouring conditions, a harmless parasite may become pathogenic.

The author discusses the various pharmaceutical treatments in vogue in the locality. Calomel has the disadvantage of causing severe stomatitis in the coloured races, while ipecacuanha has also not proved satisfactory. The proprietary remedy Kades-Antidysentericum has been found untrustworthy. Castor oil and Carlsbad salts have given fair results. From October 1911, however, the author has treated all his cases of dysentery with the liquor and tablets of uzara with striking results. The patients get solid motions in five or six days, and the remedy seems to be particularly efficacious in subduing griping. The dose for adults of the liquor is from thirty to fifty drops thrice daily, and of the tablets five three times daily. Children tolerate well the third of an adult dose.

[Uzara has been put on the market by the Uzara-Gesellschaft, G. m. b. H., Melsungen. It is stated to be prepared from a shrub, N. O. *Asclepiadaceae*, found on the West Coast of Africa.]

S. R. D.

LAVERAN (A.). **Sur le Traitement de la Dysenterie Amibienne et des Abcès du Foie par l'Emétine. (Observations à propos du Procès Verbal).**—*Bull. de l'Acad. de Méd., Paris.* 1913. Mar. 3 ser. Vol. 69. p. 142.

A note pointing out that the credit for the use of emetine in the treatment of amoebic dysentery and hepatitis should not be given entirely to ROGERS, but should, at least, be shared by VEDDER.

He gives a short abstract of VEDDER's work (see this *Bulletin*, No. 4, p. 175).

S. R. D.

ALLAN (William). **The Emetin Treatment of Amebic Dysentery.**—*Jl. Amer. Med. Assoc.* 1913. Mar. 1. Vol. 60. No. 9. pp. 664-665.

An account of two cases of dysentery treated by subcutaneous injections of emetine.

The first case rapidly recovered, the stools becoming normal on the fourth day, and the amoebae disappeared completely. The doses of emetine hydrochloride given were 1·4 grains per diem.

The second case, which had failed to improve under treatment of salol-coated pills of ipecacuanha, was at first treated with hydrobromide of emetine with no improvement, but analysis showed the sample of the drug used to be faulty. Then emetine hydrochloride was given in doses of 1·5, 1·6 and 2 grains per diem, but the dysentery persisted and amoebae continued to be present in the stools.

The doses of emetine hydrochloride were then increased to 2·4 and 4 grains per diem and the amoebae then disappeared and rapid convalescence took place. Nausea was noticed only when as much as 4 grains of the emetine salt were given.

S. R. D.

Chauffard (A.). i. **Abcès Dysentérique du Foie ouvert dans les Bronches. Guérison rapide par l'Emétine.**—*Bull. de l'Acad. de Méd. Paris.* 1913. Feb. (3 ser.) Vol. 69. No. 7. pp. 122-131. With 5 text-figs.

ii. Flandin (Charles) & Dumas (René). **Gros Abcès Dysentérique du Foie ouvert dans les Bronches. Guérison obtenue par le Traitement Chirurgical et les Injections de Chlorhydrate d'Emétine.**—*Bulls. et Mémes. Soc. Méd. des Hôpit. de Paris.* 1913. Mar. 13. (3 ser.) Vol. 29. No. 9. pp. 599-605.

iii. Chauffard (A.). **Grand Abcès Amibien du Foie. Guérison rapid par le Traitement Chirurgical suivi de la Cure d'Emétine.** —*Ibid.* Mar. 20. No. 10. pp. 630-633.

iv. **Dysenterie Amibienne Chronique. Guérison rapide par la Cure d'Emétine.**—*Ibid.* Apr. 17. No. 12. pp. 753-758.

v. Costa (S.). **Abcès Amibiens du Foie, partiellement ouverts dans les Bronches et dans l'Intestin. Guérison par les Ponctions et les Injections d'Emétine.**—*Ibid.* Apr. 17. No. 12. pp. 746-751.

vi. Dopter. **Traitement de l'Amibiase Hépatique et Inestinale par l'Emétine.**—*Ibid.* Apr. 10. No. 11. pp. 686-689.

All these papers deal with cases of hepatic and intestinal amoebiasis treated by the subcutaneous injections of hydrochloride of emetine, with or without surgical interference. Although several of the cases were in a very critical condition, recovery was uniformly rapid. The doses of emetine hydrochloride administered varied from 2 to 8 centigrams per diem and the longest period over which the injections were given was thirteen days.

In the discussion which followed the reading of Dopter's paper, Rouget mentioned further cases treated in the same way, one of which was a case of dysentery occurring in a man who had never been out of France, but who was in the habit of visiting the hospitals in which invalids from the colonies were treated. One of the cases described by Chauffard also occurred in a man who had never left France, but who had, during his military service, been attached to the marine infantry.

S. R. D.

Myer (Jesse S.) & Cook (Jerome E.). **Amebic Dysentery with Special Reference to the Ipecac. Treatment.**—*Interstate Med. Jl.* 1913. Mar. Vol. 20. No. 3. pp. 246-250.

An account of six cases of amoebic dysentery treated with salol coated ipecacuanha pills, the doses of ipecacuanha given being as high as 70 grains in one case. All improved rapidly and, as far as can be traced, have remained well since, the longest period since treatment being six years. In one case trichomonas were present in the stools in addition to amoebae.

S. R. D.

Le Roy des Barres. **Note sur un Cas d'Appendiscostomie pour Dysenterie Chronique.** — *Bull. Soc. Méd.-Chirurg. de l'Indochine.* 1913. Feb. Vol. 4. No. 2. pp. 70-72.

An account of a case of chronic dysentery of five years duration with repeated exacerbations of symptoms, the last one being very severe.

General treatment being without effect, appendicostomy was performed, the colon was washed out with a solution of 1 in 10,000 of permanganate of potash and small doses of calomel were given by the mouth.

This treatment produced rapid improvement and later the appendix fistula closed spontaneously.

S. R. D.

Milian. **Le 606 est un Spécifique puissant de la Dysenterie Amibienne et d'Emétine peut être un Médicament Antisyphilitique.**—*Bulls. et Méms. Soc. Méd. des Hôpit. de Paris.* 1913. Mar. 20. (3 ser.) Vol. 29. No. 10. pp. 626-630.

The author, having treated one case of dysentery with '606' which was followed apparently by very rapid recovery, thought that as emetine has proved so successful in the treatment of many cases of amoebic dysentery it might prove a useful remedy in syphilitic cases. Five syphilitics were therefore treated by injections of emetine; in two of these no improvement occurred, in the remainder there was an improvement.

S. R. D.

Bacillary Dysentery.

Horimi (K.). **Ueber die pathogenen Wirkungen der Dysenterietoxine.** [On the Pathogenic Action of Dysentery Toxins.] —*Centralbl. f. Bakt.* 1. Abt., Orig. 1913. Mar. 15. Vol. 68. No. 3-4. pp. 342-358.

The present paper is a continuation of the author's researches upon this subject, undertaken with the object of distinguishing the separate actions of the various toxins of the dysentery-bacillus. At the outset of the investigation five different strains of bacillus were used, but ultimately the Shiga bacillus alone was employed. Mice, rabbits, and guinea-pigs were all used as test-animals, but the rabbit proved to be most suitable.

Four separate series of researches were undertaken as follows, to elucidate the various points.

Series I.—The material used consisted of—

a. A sterilized filtrate of the 48 hour broth culture at 37° of the bacillus of dysentery, both the Shiga and the Flexner strains being used.

b. The same, after being kept a fortnight at room temperature.

With both of these fluids, injections were made into the ear-vein of the animals tested and the result showed both fluids to be strongly toxic. With preparations by method (a) of both bacilli 70 per cent. of the animals died between 18 and 38 hours after inoculation. By method (b) the Shiga showed itself the more

lethal of the two, proving fatal in every case within 26 hours, while with the Flexner culture only 4 per cent. of the rabbits died within 38 hours, the remainder surviving for periods between 17 and 37 days. With fluids prepared in both ways, characteristic hyperaemia of the small intestine, colon and appendix with haemorrhages was induced, but not of the caecum; the fatal result, however, seemed more to depend upon a neuro-toxic action, as the bowel lesions were not in any case very severe.

Series II.—This series of experiments was intended to elucidate the action of living bacilli. Inoculations as before were made with—

a. 18 hour old broth cultures at 37° not sterilized.

b. Loopfuls of a 24 hour growth on agar rubbed up with 1 cc. of salt solution.

c. A washing of the same culture with 3 cc. of salt solution to dissolve whatever was soluble.

The results obtained with all three liquids were similar to those in the first series of experiments, but more severe, especially with the Shiga strain. Intravenous injection proved much more lethal than subcutaneous or intraperitoneal. The greater lethality was ascribed to the neuro-toxin present in living bacilli. Contrary to what happened in Series I, the caecum was involved in addition.

Series III.—The Shiga bacillus alone was employed. The intention was now to separate the endo- and exo-toxins and both from the neuro-toxin.

1. A 24 hour old agar culture was irrigated with salt solution, and the liquid filtered after standing for 48 hours. This was reckoned to contain exo-toxin only, plus neuro-toxin. This fluid was found to exert a selective action on the caecum only in the way of causing hyperaemia, etc.

2. The same culture was then incubated with more salt solution for 58 hours at 37° C., the liquid being further raised to 60° for half an hour and then filtered. This was reckoned to contain endo-toxin only, and was found to exert a selective action on the small intestine solely, but in order to discriminate further the process was modified as follows.

Series IV.—1. The liquid of Series III (1) was more completely freed from bacilli by centrifuging for four hours.

2. The residue from Series III (2) was rubbed up with 0·4 per cent. caustic-potash solution to dissolve the bacilli, then shaken up with salt solution and filtered.

The selective action then became more manifest, but the liquid (2) in addition affected the colon (hyperaemia etc.).

The author believes from his experiments that the action of the various toxic principles of the dysentery-bacillus can be formulated as follows.—

1. The neuro-toxin, which is the main agent in producing death, is associated exclusively with living bacilli, its effects being most manifest when they are injected into the circulation. It may be washed out of the living bacillus along with exo-toxin by salt solution (Series III (1)).

2. The toxin thus washed out of either living or dead bacilli has a selective action on the caecum (Series III (1)) only.

3. Repeated washings with salt solution of the same bacilli extract an endo-toxin situated in the deeper layers (Series III (2)) which has a specific action on the small intestine.

4. Final solution of the bacilli from Series III (2) liberates a further principle to which the specific action on the colon is due (Series IV (2)).

With broth cultures (Series I) all of these principles would appear to be active except (2), but how this result is brought about the author does not explain.

S. R. D.

Sangiorgi (G.) & Bongioannini (G.). **Una Epidemia di Dissenteria Bacillare in Piemonte.** [An Epidemic of Bacillary Dysentery in Piedmont.]—*Pathologica.* 1913. Feb. 15. Vol. 5. No. 103. pp. 103-105.

Towards the middle of September 1912 a small epidemic broke out in the hamlet of Piana, Rocca di Canavese, having the characters of dysentery and affecting one-fifth of the whole population = twelve individuals. Of these nine were adults and three children. In the latter the symptoms were grave, and led to death in one instance. A post mortem examination was obtained in this case, that of a child aged twelve years. The large intestine was found ulcerated with discrete ulcers from end to end, while the small intestine was entirely free. From this case, and from the stools of others, the authors were able to isolate a Gram-negative, short bacillus, which presented most of the standard culture reactions of a dysentery bacillus, but was not entirely referable to any one of the known varieties. It failed to agglutinate with any of the standard sera.

The infection seems to have been imported into the locality by a soldier invalided from North Africa, who had suffered there for two months from dysentery. Pollution of the drinking water (from surface wells) followed. The authors point out the likelihood of epidemics of the same kind becoming frequent in Italy, as the result of the military occupation of Libya.

S. R. D.

Roux. **Note sur la Dysenterie Bacillaire et le Sérum Antidysentérique.** [Clinique d'Outre-Mer.]—*Ann. d'Hyg. et Méd. Colon.* 1912. Oct.-Nov.-Dec. Vol. 15. No. 4. pp. 859-861.

The author, after examining the results obtained by Vaillard and Dopter with antidysenteric serum in cases of bacillary dysentery, recommends the use of the serum prepared by these authors.

The dose recommended is 40 cc. in severe cases, 20 cc. in the milder ones, repeated next day if necessary.

The prophylactic inoculation of 10 cc. is said to render the patient immune for ten days.

[The author gives no account of any cases coming under his care.]

S. R. D.

Flagellate Dysentery.

Mello-Leitao. **Flagellate Dysentery in Children.**—*British Jl. of Children's Diseases.* 1913. Feb. Vol. 10. No. 110. pp. 60-66.

In this interesting paper the author discusses briefly the various forms of dysentery. He believes that there is a primary flagellate dysentery, and relates his experiences in the Children's Hospital Dispensary at Rio de Janeiro. He writes: "We have personally observed 54 cases of dysenteric diseases. In the stools which were examined at the hospital laboratory flagellates were found in 32 cases, and *Entamoeba tetragena* in 4 cases. In 2,135 stools encysted forms of *Trichomonas* were found only five times in healthy children, all over four years of age, and twice in non-dysenteric enteritis in children above two years of age. We regard the presence of flagellates in dysenteric stools as more than a mere coincidence for the following reasons: Flagellates were never found in children under four years without there being enteritis, and the diarrhoea was always dysenteric in the children who were under two years."

"In the cases of dysentery with flagellates present in the motions, as soon as the flagellates disappeared improvement took place and disappearance of the cysts indicated recovery."

"Flagellate dysentery is the commonest variety of infantile dysentery, and is rather more frequent in children under five years than in adults. The flagellates most commonly found in the stools are *Trichomonas intestinalis* (Leuckart), *Lamblia intestinalis* and *Cercomonas hominis*."

"In thirty-two cases of flagellate dysentery which we observed, *Lamblia* and *Trichomonas* were present as follows: *Trichomonas intestinalis* in 9 cases; *Lamblia intestinalis* in 3 cases; *Trichomonas* plus *Lamblia* in 20 cases. In five cases with flagellates and no bowel trouble *Trichomonas* only was present; of the cases of enteritis without dysenteric motions, one showed *Trichomonas* only and another *Lamblia* only."

"In order to show the pathogenicity of flagellates in children's dysenteries, we give below the occurrence of flagellate dysentery and also of dysenteries without flagellates or amoebae as well as the occurrence of flagellates in healthy children:

Age.	Flagellate dysentery.	Other dysenteries.	Flagellates in health.	Notes.
Under 1 year	7 cases.	4 cases.	0 cases.	—
„ 1-2 years ...	8 „	6 „	0 „	—
„ 2-3 „ ...	5 „	4 „	1 „	Enteritis.
„ 3-4 „ ...	4 „	1 „	1 „	Diarrhoea.
„ 4-5 „ ...	2 „	0 „	0 „	—
„ 5-6 „ ...	1 „	1 „	1 „	—
„ 6-7 „ ...	2 „	1 „	1 „	—
„ 7-9 „ ...	1 „	0 „	2 „	—
„ 9-12 „ ...	2 „	1 „	2 „	—

"Sex has no influence in flagellate dysentery; 17 of our cases occurred in boys and 15 in girls. Flagellate dysentery is more frequent at the end of summer and in the first months of autumn."

"The onset is, as a rule, not abrupt, but is preceded for a day by diarrhoea with faecal motions, and by fever. The next day the stools contain mucus and blood and become dysenteric. Free flagellates are then abundant in the evacuations. The motions rarely exceed twenty *per diem*; the greatest number of motions which we observed was twenty-two in the twenty-four hours. They always contain only a little blood and an excess of mucus."

"A diagnosis between flagellate and other dysenteries by the clinical phenomena only is impossible in most cases, but very easy by microscopic examination of the stools."

"Treatment is simple; magnesium sulphate (7 per cent.) and water diet (in infants under two years) or milk (over two years) will be efficacious in most cases. Sometimes, however, enemata of collargol (1 per cent.) or electrargol are required."

The author's summary is as follows:—

"(1) To the other forms of dysentery a primary flagellate dysentery is to be added.

"(2) Flagellate dysentery is due to *Trichomonas intestinalis* (Leuckart) and *Lamblia intestinalis* (Lambl.), either separately or in combination.

"(3) Flagellate dysentery is a benign disease, and the most frequent form of dysentery in infants.

"(4) *Trichomonas* and *Lamblia* are pathogenic to infants under three years.

"(5) Flagellate dysentery does not depend on the infant's diet."

H. B. Fantham.

Escomel (E.). **Sur la Dysenterie à Trichomonas à Arequipa (Pérou).** —*Bull. Soc. Path. Exot.* 1913. Feb. Vol. 6. No. 2. pp. 120-122.

The author states that he has collected 152 cases of dysentery due solely to Trichomonas. The parasite is only one-fourth the size of the variety found occasionally in the vagina. In microscopical preparations the movements of these organisms was noticed to stop after a variable interval, and they became encysted.

Cultivations were obtained in a broth made from lettuce stalks after an interval of 25 days.

Experiments on animals, when carried out on dogs, were successful, both when the infected stools and cultures of the trichomonas were used, the animals being affected with diarrhoea for about seven days; during the attack active organisms were found in the stools, after recovery only encysted forms could be discovered.

Examination of the reservoirs containing the water for drinking purposes showed the presence of trichomonas; after cleaning these reservoirs none were found and no further case of dysentery occurred.

Treatment with ipecacuanha and calomel proved to be useless, but the author, acting on the suggestion of Hunter, found that turpentine, both *in vitro* and *in vivo*, rapidly killed off the trichomonas.

The method of administration was to give 2 to 4 grams of essence of turpentine in an emulsion by the mouth and enemata containing 15 to 20 drops of turpentine emulsified in the yolk of an egg, to which was added a little water and tincture of opium.

S. R. D.

Mixed.

Millous. **Remarques sur des Cas de Dysenterie à Thanh-hoa en 1912.**—*Bull. Soc. Méd.-Chirurg. de l'Indochine.* 1913. Jan. Vol. 4. No. 1. pp. 7-13.

The only facts of interest in this paper are

1. The seasonal prevalence of dysentery, which commences in April and lasts till the end of September, the maximum occurring in June.

2. Clinically two types were noticed. The first, occurring in April and May was very severe, was accompanied with fever, and had a very high mortality, 50 per cent. This type the author believes to be bacillary, but as his investigations consisted of microscopical examination of the stools and the agglutination of a stock culture of *B. dysentericae*, Shiga in dilutions up to 1 in 30, this statement cannot be considered proved.

The second type, which occurred most frequently in August and September, was not accompanied with fever, the mortality was much less, and on microscopical examination of the stools amoebae were seen. These amoebae were very imperfectly studied.

An account of a case is given in which a protozoon which the author believes to be a flagellate was found.

S. R. D.

Miscellaneous.

Darling (S. T.). i. **The Rectal Inoculations of Kittens as an Aid in determining the Identity of Pathogenic Entamoebae.**—*Bull. Soc. Path. Exot.* 1913. Mar. Vol. 6. No. 3. pp 149-153.

ii. **Budding and Other Changes described by Schaudinn for *E. histolytica* seen in a Race of *E. tetragena*.**—*Trans. Soc. Trop. Med. & Hyg.* 1913. Apr. Vol. 6. No. 5. pp. 171-173: and *Jl. Amer. Med. Assoc.* 1913. Apr. 19. Vol. 60. No. 16. p. 1220.

Darling has previously shown that the trophozoites of *Entamoeba tetragena* undergo developmental changes when inoculated rectally into kittens, and in the present paper details and extends his results. The study of experimental dysentery, easily provoked in kittens by rectal injection of fresh material from dysenteric stools, convinces him that degenerative nuclear changes in Entamoebae do not occur more easily in kittens than in man. The inoculation material should be as fresh as possible.

Trophozoites of *E. tetragena* from man are large, with relatively small nuclei, and no chromidia " (crystalloidal substance? Chatton) ". Cysts are never seen. If successful treatment be given or recovery occurs, the trophozoites disappear from the stools and infection terminates. The morphological character

of the nucleus is very important in such cases and consistency of technique is essential, as different appearances result from the use of different fixatives and different modifications of haematoxylin. Amoebae, wet fixed with Schaudinn's fluid, stained with iron haematoxylin or iron haematein show a small, faint staining centriole, peripheral chromatin neither pronounced in quantity nor in intensity of staining, with a karyosome represented by a faint ring or invisible. Using Zenker or Flemming's solution and staining with Mallory's phosphotungstic acid haematoxylin, the centriole is more densely stained, there is more peripheral chromatin staining deeper and the karyosome is still faint but definite. The technique recommended is: " Fixation in Zenker's fluid diluted one-fourth or one-eighth, or in Flemming's solution, staining in phosphotungstic haematoxylin and differentiating with weak potassium permanganate solution ".

In relapses or prolonged untreated cases of entamoebic dysentery, a generation of smaller trophozoites is associated with or replaces the larger ones. In stools they are frequently refractile and, if so, stain very slowly intra vitam with gentian violet. So stained, two features characterise this, the " smaller, senile or precyst generation ":—(1) the presence in the cytoplasm of blocks of the crystalloidal substance of Chatton, (2) the very prominent, densely stained karyosome. Darling believes this generation to be that described by Elmassian as *E. minuta* and by others as *E. tetragena.*

Some cases of entamoebic colitis have small cysts with 1, 2, or 4 nuclei and blocks of chromidia, associated with the precyst generation; later when the colitis has gone, it is possible to find *tetragena* cysts in stools without mucus, thus completing the cycle of the parasite in man. " It may be conceived that of the three phases mentioned:—(a) the dysenteric trophozoite, (b) the precyst trophozoite and (c) the cyst, (a) represents something analogous to adolescence and (b) to maturity and senility." These " terms represent corresponding infecting powers of the trophozoites in any given case of entamoebic colitis ". . . . . " If kittens be inoculated rectally with material from an adolescent or *histolytica*-like strain, the strain may be carried on upon the death of the preceding kitten for four, five or six transfers, the strain thus taking about one month for its sojourn in the colon of the kitten, but if, on the other hand, a chromidia-containing senile " tetragena "-like strain be injected rectally into kittens, it cannot be carried through more than one or two transfers ". In the colon of the kitten the senile strain encysts.

The colon of a kitten (weight 500 to 700 grams), particularly the caecum, is the nearest approach to a culture tube for *E. tetragena* and developmental changes of the amoebae occur there much as in untreated human dysentery. Because of the shorter duration and fatal issue in kittens, it is necessary to trans plant the culture to another kitten, when the first is dying, or soon after, and by this process only can the age of adolescent strains be prolonged, and appearances of maturity observed. The stages in " the transformation of a histolytica-like trophozoite into a senile tetragena-like trophozoite " can thus be traced.

This method is of much value where there is doubt or disagreement as to the nature of the amoebic trophozoites in cases of dysentery. Rectal injections into kittens of fresh material containing trophozoites should be made, and wet fixed stained preparations of trophozoites from remove to remove made to see if they correspond to *E. tetragena* or some other form.

Some preparations from the last remove may have pathological trophozoites, recognised by the appearance of buds peripherally and by "extrusion of chromidia, nuclei and portions of cytoplasm." The staining powers of the nuclei are less sharp than in normal organisms.

In conclusion, "The writer believes that cases thought to be 'histolytica' dysentery will resolve themselves into infections by *E. tetragena.*"

"*E. histolytica*" is, in all likelihood, a spurious species, having been described from degeneration forms in senile races of *E. tetragena.*

H. B. F.

James (W. M.). **Infection with *Entamoeba tetragena*.**—*New York Med. Jl.* 1913. Apr. 5. Vol. 97. No. 14. pp. 702-705.

The author has studied the various amoebae found in Panama district. He has found that the commonest cause of the dysentery of this region is the *Entamoeba tetragena* which accounts for 70 per cent. of the cases.

In the author's opinion the *Entamoeba tetragena* is a distinct variety from the *Entamoeba histolytica*, the differences which he lays special stress on being—the large size of the nucleus of *E. tetragena*; the fact that in cases infected with *E. histolytica* no cysts are ever discovered as is commonly observed in cases infected with *E. tetragena.* During intervals between the attacks of dysentery the amoebae are more easily differentiated, as *E. tetragena* is then found to be much smaller and less active and resembles in every way the amoebae described by Elmassian and named by him *Entamoeba minuta.*

All the author's cases yielded quickly to treatment with bismuth; the cases due to *E. tetragena* appeared to be milder but more chronic.

The first part of the paper is occupied by the account of a case in which both *Entamoeba histolytica* and *E. coli* were found. This case rapidly improved under treatment, but after the administration of a saline purge large numbers of *E. tetragena* were found, both free and encysted; after three months the case relapsed, *E. tetragena* being again found.

S. R. D.

Vonwiller (Paul). **Ueber den Bau der Amoeben.** [The Structure of Amoebae.]—*Arch. f. Protistenkunde.* 1913. Feb. 20. Vol. 28. No. 3. pp. 389-410. With 1 plate.

The author gives first a detailed account of the intra vitam reactions of a multinucleate amoeba, since found to be *Amoeba*

nobilis, Penard, and of *Amoeba proteus*, both occurring in fresh water aquaria in the laboratory of Würzburg. The second part of the paper is devoted to an examination of the structure of these Amoebae, comparison being made throughout with the results of other workers. Owing to its nature it is impossible to summarise the paper adequately and those interested should consult the original.

The chief intra vitam stains used were methylene blue, Bismarck brown and neutral red. The author summarises his results in the following table:—

There colour with:—

	Food vacuoles.	Albuminous grains.	Crystal grains.	Tiny granules.
Neutral red ...				
Bismarck brown	„	„	„	—
Methylene blue	„	?	—	—

The time necessary for a reaction and the amount of colouring both need attention. Also chemical changes should be noted as indicating acid or alkaline reactions.

The structure of the protoplasm, albuminous grains, crystals, tiny granules and the vacuole are then discussed in detail and some notes given on the structure of the nucleus of the two species of Amoebae. Finally the author establishes the identity of his multinucleate Amoeba with that of *A. nobilis* of Penard, having received a preparation of that organism from its discoverer. [The whole paper is highly critical and needs reading in detail to be appreciated.]

H. B. F.

Mathieu. **Les Colites Dysentériformes Graves et Hemorragiques: leur Diagnostic Différentiel et leurs Indications Opératoires.**—*Jl. des Practiciens.* 1913. Apr. 12. Vol. 27. No. 15. pp. 225-227.

The author discusses the use of the sigmoidoscope as a means of diagnosis and gives descriptions of the various appearances observed by these means in bacillary dysentery, amoebic dysentery, carcinoma of the rectum, tubercular ulceration, syphilitic ulceration, etc. etc.

He then discusses surgical treatment and recommends appendicostomy in severe cases rather than colotomy or short circuiting of the ileum into the rectum.

S. R. D.

Normet. **Un Nouveau Signe Clinique differential de la Dysenterie Amibienne et de la Dysenterie Bacillaire.** [Clinic d'Outre-Mer.]—*Ann. d'Hyg. et Méd. Colon.* 1912. Oct.-Nov.-Dec. Vol. 15. No. 4. pp. 861-864.

After pointing out that bacillary dysentery is much more frequently accompanied by fever than the amoebic variety and that in the bacillary type the recovery is much more rapid and sudden, the author states that frequently a differential diagnosis

may be made by giving the patient an enema of either a 0·5 per 1000 solution of permanganate of potash or a 1 per 1000 solution of nitrate of silver.

In cases of bacillary dysentery such an enema produces no discomfort, while in the amoebic type a good deal of pain is produced which lasts for some time after the bowel has been emptied.

S. R. D.

Stiles (Ch. Wardell). **Contamination of Food Supplies. The Value of Protozoa as an Aid in Determining Fecal Contamination of the Food Supply.**—*U.S. Public Health Rep.* 1913. Feb. 14. Vol. 28. No. 7. pp. 290-291.

The author suggests as a method to ascertain if the food supply of a community is faecally contaminated the examination of the faeces of the various individuals of that community for the three following protozoa—*Entamoeba coli*, *Lamblia duodenalis* (*intestinalis*) and *Trichomonas intestinalis*.

He points out that all these protozoa are parasitic to the intestinal tract of man, that they all have an encysted stage which may be either air-borne or easily conveyed to food etc. on the bodies of house flies. In some communities very large percentages of the inhabitants are infected with one or other of these parasites, ten to forty per cent. being not uncommon, and even in some cases sixty per cent. of the population having been found harbouring such parasites.

The practical application of these observations is that whenever these parasites are found in a large percentage of the members of a community means should be undertaken to improve the methods used for the disposal of dejecta so that the food supply should be more carefully protected against faecal contamination.

S. R. D.

SPRUE.

Castellani (Aldo) & Low (G. C.). **The Rôle played by Fungi in Sprue.**—*Jl. Trop. Med. & Hyg.* 1913. Feb. 1. Vol. 16. No. 3. pp. 33-35.

The authors in studying eight cases of sprue found fungi either in the saliva or stools in seven; in the one in which no fungi were discovered the stools were not frothy and were not acid in reaction. The following fungi belonging to the genus *Monilia* were isolated:—*M. enterica, M. faecalis, M. insolita, M. intestinalis, M. rotunda*, all of which had been previously described by one of the authors (A. C.). In addition another member of the genus *Monilia* was found in scrapings from the tongue of one of the patients.

This fungus grows very abundantly on slightly acid media, giving rise to round colonies which rapidly coalesce into creamy white masses with a smooth surface; when examined microscopically a few mycelial forms are seen, but the commoner form is yeast-like. Growth occurs on alkaline media, but is less abundant.

Biochemical reactions were as follows: acid and gas were produced in broth containing glucose, maltose, and laevulose; acid only in the case of saccharose, dextrin, galactose and glycerine.

A long and very complete table of the biochemical reactions of all the known Monilia is given. All these fungi have been found in cases not suffering from sprue.

Experiments on animals were negative except when massive doses were injected intraperitoneally, when a purulent peritonitis resulted. Subcutaneous inoculation produces agglutinins specific to the variety of Monilia.

The authors found that when the patients were treated with large doses of bicarbonate of soda the fungi disappeared from the stools, and that the symptoms of flatulence and the frothiness of the stools were much diminished.

The conclusion reached is that fungi are not the cause of sprue, but that they may produce the frothiness of the stools and the symptoms of flatulence.

S. R. Douglas.

VERRUGA PERUVIANA.

Cole (H. N.). **Verruga Peruviana and its Comparative Study in Man and the Ape.**—*Arch. Internal Med.* 1912. Dec. 15. Vol. 10. No. 6. pp. 668-674.

In this paper the author has gathered together from various observers the history, clinical symptoms etc., of this very interesting disease, which, as he says, is likely to become more important when the Panama Canal is opened. The most complete account is to be found in the monograph of Odriozola "La Maladie de Carrion" ou "La Verruga Peruvienne". The case of a European guide is described, who contracted the granulomatous form of the disease during an enforced short residence in the infected locality. On returning to Switzerland the man was under the care of Jadassohn in the Berne Clinic, having at that time many cutaneous growths. Several of the tumours were excised, and from them cultures on various media were made without success. Rabbits, guinea-pigs, doves, chickens, rats, and a dog were inoculated, also without success, but in a Cercopithecus and two Rhesus monkeys similar tumours to the third generation were produced. It is noted that in neither the man nor the monkeys were any of the peculiar blood changes found, which have been described in the acute form of the disease known as Oroya fever, and the author states that it will require much further study before it is possible to say whether the "Fiévre grave de Carrion" (Oroya fever) and "Eruption de Carrion" should be classed as a single disease, or as two clinical and distinct entities.

P. W. Bassett-Smith.

Monge (Carlos). **The Haemoleucocytic Formula in Carrion's Disease, or Verruga Peruana.**—*Jl. Lond. School of Trop. Med.* 1912. Vol. 1. Part 3. pp. 239-242.

From 1908 to 1910 Monge studied the blood variations of over one hundred cases of this disease. Further observations have confirmed his earlier results. He notes two types of cases—an acute or severe form, which nearly always terminates in death, and an eruptive form, which is generally mild and of long duration. In the former the blood was examined daily, in the latter weekly.

Acute form.—This is characterised by the very rapid production of severe anaemia, the red cells being reduced even as low as 500,000 per c.mm., with extraordinary alterations in their size, shape, and colour, nucleated forms both normoblasts and megaloblasts being present; in one fatal case there were 15,300 of the former, and 3,420 of the latter per c.mm. Polychromatophilia and granulation of the red cells were also very marked. The leucocytes were always greatly increased in number (20,000 and upwards), with an early relative increase in polymorphonuclears, a decrease in the mononuclears, and a disappearance of the eosinophiles; the nuclei of the polymorphonuclears were rarely much lobulated, more often simply bilobed.

Chronic eruptive form.—At first there was a great fall in the number of red cells, with much irregularity of size, shape, and colour, but as the disease progressed the signs of this anaemia became less and less evident; the leucocytes at the commencement were increased in number, later in the disease they were nearly normal. The changes found in the relative proportions of the different forms of the white cells during the course of the disease are very remarkable. The early high polymorphonuclear increase, with absence of eosinophiles, gives place to a great relative increase of the mononuclears (50 to 60 per cent.) with presence of eosinophiles. The author concludes that the study of the haemoleucocytic formula is of great assistance in the prognosis and treatment of the disease.

The acute disease is sometimes called "Oroya fever."

[The reviewer, who has had the opportunity of studying a number of blood films, which were sent to him by Dr. Gastiaburu of Lima, was struck by the remarkable number of nucleated red cells present and by the great variation in the character of their nuclei. The granulations in the red cells were so large and irregular that they suggested the possibility of a minute intracorpuscular parasite. (*Brit. Med. Jour.* 1909. Sep. 18. p. 783.)]

P. W. B.-S.

Mayer (M.), Rocha-Lima (H.), & Werner (H.). **Untersuchungen über Verruga Peruviana.** [Researches on Verruga Peruviana.] —*München. Med. Wochenschr.* 1913. Apr. 8. Vol. 60. No. 14. pp. 739-741.

A description is given in this paper of the case of a young sailor who had travelled from Lima and had climbed the Andes in Peru. Soon after his return to Lima in April, 1912, he was attacked with a severe fever and was treated in the hospital there for 2½ months; this fever was uninfluenced by quinine and disappeared spontaneously. Fourteen days after his discharge from the hospital the fever recurred and was associated with a nodular eruption; this eruption lasted from July to December, when he was admitted into the Seamen's hospital at Hamburg. At that time he had also malarial fever with the presence of parasites, amenable to quinine, and his spleen was enlarged. There was an erythema over the legs and arms with a nodular eruption, the nodules being a cherry red colour and generally hemispherical in shape; these had either a dry shiny surface or more commonly were like mucous patches; subcutaneous nodules were also present. The blood showed a decrease in the number of red cells and a relative mononuclear increase. The eruption varied from day to day, fresh nodules appearing, others drying up, and some becoming haemorrhagic. The patient was discharged cured on Feb. 7, 1913, after he had received three intravenous injections of salvarsan. The character of the eruption was that of Verruga, and the typhoid-like fever with the nodular eruption was probably "Carrion's fever." The serum tested with B. para-typhosus gave no evidence of agglutination.

A pathological examination of the nodules by smears showed a number of spindle shaped cells with large oval nuclei, the protoplasm being free from granules. When stained by Giemsa in some cells two kinds of inclusions were found; the smallest forms were placed at the side, or near one end of the nucleus, and stained bright red; the larger were about the size of an erythrocyte, staining bright red or brick red. These inclusions are described as Chlamydozoa. Histological examination of the verruga nodule showed a marked proliferation of the vessels, associated with oedema and a small celled infiltration around the vessels, with the formation of compact tumour-like strands of tissue and cell nests; many of the cells were spindle shaped or branched. In the protoplasm of many of the cells inclusions were found similar to the chlamydozoa inclusions of other diseases; these were quite different from the granules found in leucocytes and mast cells, the shape, number, and position of most of the inclusions excluding the possibility of their being degenerated nuclei, or fragments of red cells. The circumstance that a specific tissue proliferation of this nature is a peculiarity of chlamydozoa diseases makes the above assumption possible. In the external part of the superficial cutaneous nodes a cavernous structure was seen. A series of monkeys were inoculated; positive results were obtained in four cases, thus showing that the verruga nodule can be transmitted. The incubation period of the first passage was 34 to 45 days, that of the second 21 days. The monkeys showed very few of the characteristic blood changes found in man.

P. W. B.-S.

ANNUAL REPORTS.

British Guiana. **Report on the Peter's Hall Medical District for the Year 1911-1912.** [Ferguson (J. E. A.), Government Medical Officer.] Received in Colonial Office Jan. 21, 1913.

Ankylostomiasis.—When the author took charge of his district in 1904, he found this disease exceedingly prevalent on the estates. The great majority of the coolies harboured the parasite, which greatly impaired their efficiency as labourers. In both sexes deaths from acute ankylostomiasis were frequent. A system of treatment was adopted in November 1908 on a few voluntary subjects. The author gave each a cachet of ten grains of thymol every night for a period of many weeks. This dose did not interfere in the least with their ordinary occupation. Repeated microscopical examination of the faeces showed a gradual diminution of the number of ova until at the end of four months they disappeared completely. This long continued course of thymol produces no ill effects whatever and completely cures the infection. The experiment was then extended and numbers of infected persons were put on what the author calls his "thymol list." The first batch of coolies, placed on the list in February 1912, has been re-examined and nearly all of them were found free from ova and were therefore taken off the list permanently. It is proposed to examine the others after four months of treatment. Already there has been a great diminution of ankylostomiasis as a result.

Malaria.—In April 1910 the author began to give quinine systematically to the coolies in the estate barracks as a preventive against malaria. The children received the treatment first, the adults later. The results have been striking and are seen in the marked reduction in the number of cases and deaths from fever.

The author believes that there is every reason to hope that, with the entire elimination of the ankylostome from these estates by the method described above and the more complete control of malaria by still greater care in the administration of quinine, the birth rate on these estates, in spite of the inequality of the sexes, can be kept well above 30 per thousand and the mortality considerably below 20.

G. C. Low.

Cyprus. **Annual Report and Medical Statistics of the Island of Cyprus for the Year 1912.** [Cleveland (M. A.), Chief Medical Officer.] MS. Report, dated Cyprus, Mar. 17, 1913.

The general health of the inhabitants and the sanitary condition of the Island for the year have been satisfactory.

Malaria.—This disease seems to have been more prevalent than usual and more cases have been treated by the Government Medical Officers. The subjoined table indicates this increase:—

Year.	Nicosia.	Larnaca.	Limassol.	Famagusta.	Papho.	Kyrenia.	Total.
1907 ...	1,310	2,020	1,690	1,456	734	401	7,561
1908 ...	3,251	1,659	1,412	2,406	1,389	629	10,746
1909 ...	2,640	1,045	1,293	1,103	935	434	7,450
1910 ...	948	938	1,502	1,322	829	535	6,074
1911 ...	2,138	1,438	1,390	1,016	676	540	7,198
1912 ...	2,561	1,583	1,815	2,889	711	476	10,035

Epidemic Cerebro-spinal Meningitis.—24 cases of a mild type of this disease with one death were notified during the year under discussion. In each case strict isolation and thorough disinfection was carried out, and although it is not known how the disease is transmitted these measures appeared to be beneficial.

Leprosy.—Fewer cases of leprosy have been admitted into the Leprosy farm during 1912 than in previous years. Though it may perhaps seem premature to express a definite opinion, the disease seems to be decreasing. As far as is known all fresh cases are sent up to the farm for isolation as soon as symptoms of the disease show themselves.

G. C. L.

Fiji. **Annual Medical Report for Fiji for 1911.** [Lynch (G. W. A.).]—Printed for the Legislative Council, Fiji, 1912. Received in Colonial Office Jan. 13, 1913.

The death-rate for 1911 for all races in the Colony, including Rotuma, was 33·11 per thousand, against 35·44 per thousand in 1910; 29·31 per thousand in 1909; and 31·38 per thousand in 1908. If the Rotuma figures are omitted the rate comes out at 30·10 per thousand. The European rate was 12·34 per thousand, against 19·10 in 1910. The Fijian rate was 37·69 per thousand, against 41·24 per thousand in 1910. The Indian rate was 18·24 per thousand, against 25·91 per thousand in 1910.

The European figures are striking for a tropical country, and even allowing for the fact that a large number of this part of the community retire from Fiji after a certain age, and that some invalids go away and do not return, the rate must be considered a low one. Among Fijians the heavy death rate is amongst the children.

Dysentery.—Large numbers of cases of this disease [variety not stated] were treated in all the hospitals throughout the colony. At the colonial hospital there were 274 cases with 15 deaths. In 1910 there were 353 cases with 12 deaths. In the provinces also high figures were reported.

Yaws.—This disease is becoming less frequent. Hospital returns, of course, show large numbers of admissions, but these are in most cases for the late manifestations of the disease. Much benefit has accrued to these cases by salvarsan treatment, and the use of this drug is now being extended to the provincial hospitals.

Leprosy.—All lepers are now being transferred to Makogai, an island in the central part of the Fiji group, some 18 miles east of Levuka and about 70 miles from Suva. The island is two and seven-eighth miles in length and two miles in breadth and the area consists of 2,075 acres. The island has been purchased by the Government and a special station erected for the lepers.

Ankylostomiasis.—This condition is in many instances introduced by Indians imported for the plantations. On one plantation the medical officer has instituted regular week-end treatment for patients suffering from the disease with, so far, very excellent results. It is now proposed to do the same for the patients in the Suva gaol, and on other plantations where the disease is prevalent. With this, together with improved sanitary inspection and conditions, it is hoped to eradicate or at least materially to reduce the disease.

Filariasis.—The results of filarial infection continue to be seen in all its manifestations in all parts of the colony. So long as vast areas, which cannot be made mosquito-proof except at enormous cost, exist it is difficult to see how the disease can be diminished. Efforts are now being directed towards the better sanitation of towns and their surroundings, by improvement in latrines, town and house cleanliness, use of mosquito screens, and the clearance of bush and scrub for some distance round each town.

Dengue Fever.—84 cases were admitted into the colonial hospital during the year, of which number 18 were Europeans. There were no deaths. 957 cases were treated in the plantation hospitals and 290 in the provincial ones. Typical dengue fever is endemic in the colony and few new-comers escape. The disease attacks the latter with considerable severity in most cases and the symptoms in the majority of instances are quite typical.

Tinea imbricata.—Numerous cases of this parasitic disease continue to be treated in many parts of the colony, both at provincial hospitals and by native medical practitioners at their stations. For treatment sulphur fumigation has been adopted with very good results. By this means and by other hygienic measures it is hoped in a short time to stamp out the disease.

G. C. L.

Gibraltar. **Annual Report on the Public Health of Gibraltar for the Year 1912.** [Fowler (C. E. P.).]—Gibraltar: Garrison Library Printing Establishment, 1913.

Undulant Fever.—Three cases only were notified, and in two the infection was, without doubt, contracted in Spain. The origin of the other case was uncertain. The blood of the majority of the goats on the Rock was tested during the year. Only about five per cent. are now found to yield a reaction to the *Micrococcus melitensis*, in comparison with about ten per cent. a few years ago. Further, the reaction in the positive cases is a very feeble one.

G. C. L.

Malay States. **Report from the Institute for Medical Research for the Period April 1st to September 30th, 1912.** [Fraser (H.), Director.]—*Rept. of Advisory Committee for Trop. Diseases Research Fund for* 1912. pp. 153-168. (1913. London: H.M. Stationery Office. [Cd. 6669.])

The report deals, amongst other subjects, with beriberi, leprosy, blackwater fever, cholera, plague, rabies, cysticercus cellulosae, and the bacteriological examination of waters.

Beriberi.—Fraser says that there are political and commercial difficulties which hinder the application of preventive measures, so that even in the most favourable circumstances cases and epidemics of the disease must continue to occur. In 1911 there were admitted into the Government hospitals of the Federated Malay States 5,540 cases of beriberi of which 695 died. In Perak 1,615 cases were admitted to hospital, as compared with 1,622 in 1910. In Negri Sembilan there was an increase both in the number of cases treated and in the percentage of deaths. These cases were almost wholly confined to the Chinese, of whom, according to the census of 1911, there are 433,244. In the Straits Settlements 2,056 deaths occurred in 1911, as against 1,737 in the previous year. Such being the case, it was thought desirable to determine if a remedial agent could be prepared from polishings of rice. As collected in the rice-mills, polishings are mixed with dust and adventitious substances. The mixture does not look palatable either as a gruel or as an emulsion, and an adult accustomed to the use of polished rice would require not less than 1·75 ounces of polishings daily. In this form one would be administering a quantity of substances which are unnecessary and perhaps even undesirable for a sufferer from beriberi, but if the active substances could be separated from the mixture and given in a readily available form, an agent might be obtained which would be of value in the treatment of patients. It by no means follows of course that that substance, the absence of which from a diet gives rise to disease, will induce recovery in sufferers from that disease.

A series of experiments was conducted on fowls, the results of which were favourable, and experiments are now in progress with a view to determining if the remedy can be prepared by a less expensive process, for example by employing weaker alcohols or water. The less alcohol contained in the menstruum the more saccharine material passes into solution, but whether or not the presence of this substance is disadvantageous the author has not yet been able to determine. A watery extract resembling malt extract in appearance and consistence might prove valuable both from the curative and nutritive standpoints.

Leprosy.—Experiments were carried out with a view to the cultivation of the bacillus of leprosy. Different media such as those of Williams, Bayon, and Clegg were used. Out of 22 patients dealt with, from whom 246 inoculations were made on various culture media, in no single instance was a culture of lepra bacillus obtained. By certain processes of staining and

fixing the author believes it is possible to find in films non-acid-fast contaminators, streptothrices and bacilli, approaching in slenderness the lepra bacilli, but on further investigation it has been found that they have no genetic relationship to it. Cultures obtained after incubation for three or four days are invariably those of contaminators; those obtained after prolonged incubation are contaminators which either have been introduced accidentally or have grown through the cotton-wool plugs.

Blackwater fever.—Fletcher in his report on this subject states that of recent years, concurrently with a large influx of Europeans and of Indian labourers, the opening up of considerable areas of land for rubber planting and a great increase of malaria throughout the country, there have been a number of cases of blackwater fever, a disease hitherto almost unknown in the Federated Malay States. During the past six months material was received from seven different individuals for confirmation of the diagnosis of blackwater fever. Fletcher's examination resulted in the diagnosis being confirmed in only two. In three of the above cases in which the urine was sent for examination, the dark colour was not due to haemoglobinuria, and in at least one of the cases in which haemoglobinuria was present, it was not due to blackwater fever.

Cholera.—Two cases of this disease were verified by bacteriological examination.

Plague.—In April 1912 the bacteriological examination of the bubo of a patient who had died at the General Hospital, Kuala Lumpur, showed that he had been suffering from plague. On the following day *Bacillus pestis* was found in the primary bubo of a patient at the District Hospital. Both of these cases and two others which occurred in May and June came from a small hamlet, about equidistant from Kuala Lumpur and the town of Ampang, five miles away.

An examination of the rats caught in this place showed that they were suffering from epizootic plague. For some three months, between April 16th, 1912 and July 10th, the Sanitary Officer forwarded to the Institute rats trapped or picked up in the village where these plague cases had occurred. Of 72 rats which were examined, nine were found to be infected with plague. Only four of the rats were brought to the Institute alive and, as fleas generally quit their host as soon as it dies, very few of these parasites were found upon the rats examined; all were of the species *Loemopsylla cheopis* (Rothschild). Among the rats examined were six examples of *Mus musculus* (Linn.) and two shrews, *Pachyura murina* (Linn.). The remainder were all of the species *Mus rattus*. Three of these belonged to the small variety, *Mus concolor* (Blyth), and the rest to the variety *Mus griseiventer* (Bonhote), the common Malay house-rat. The three examples of *Mus concolor* were brought from the same house on the same day and had all died of plague. It is said that this variety of *Mus rattus*, which occurs only eastward of India proper, is the common house-rat in Yunnan, a notorious home of plague.

Rabies.—The brains of seven dogs, suspected to have been suffering from rabies, were examined for Negri's bodies, which

were found in five. These five cases occurred in Negri Sembilan, at places so far apart as Seremban, Jelebu, and Gemas, indicating that the disease is spread over a wide area.

Cysticercus cellulosae.—Portions of two pigs' carcases infected with *Cysticercus cellulosae* were sent from the State of Negri Sembilan by the Veterinary Surgeon. One of these pigs had been imported from Saigon and the other from the Island of Balik. This cysticercus has not been met with hitherto in the Federated Malay States. Though the Chinese eat largely of pork, they cook it thoroughly, and *Taenia solium* is very uncommon.

G. C. L.

Montserrat. **Report on the Health and Sanitary Condition of Montserrat for the Year 1912.** [McPherson (J. C.).]—MS. Report. Received in Colonial Office Mar. 4, 1913.

For the year under discussion the rate of mortality was very low and there was little to be noted as regards special causes of disease and death. During October and November ten cases of fever, hitherto undescribed in reports, occurred. This fever was distinguished by low temperature (100-101° F.), general muscular pains and headache. It lasted almost exactly seven days and was followed by great physical weakness. There was no exanthematous rash, but two of the cases suffered from enlargement of the lymphatic glands. The affected persons lived in adjacent houses so that there must have been infection, either directly or by means of a local carrier.

Yaws and filariasis are less prevalent than in other parts of the Leeward Islands, and ankylostomiasis is infrequent. No malaria, yellow fever, dengue or other tropical diseases were noted. Syphilis is common, and tuberculosis also causes a certain number of deaths. Four people died of cancer.

G. C. L.

Somaliland. **Annual Medical Report for the Year 1912.** [Paget (A. J. M.), Senior Medical Officer.]—Received in Colonial Office Feb. 22, 1913.

The general health is considered only as regards the immediate coast belt; no reliable information as regards the interior has been available.

Malaria.—With the exception of malaria in its milder forms insect borne diseases are rare. The total number of malaria cases was 954 with only one death. The record was 1,662 cases in 1911 and 1,155 in 1910. The author believes that with a comparatively small amount of supervision and expenditure these figures could be greatly reduced, but that the chief difficulty would be the obtaining of native co-operation and the prevention of destruction of screens or well covers by the natives in the town of Berbera.

Small-pox.—It has been found almost impossible to prevent this disease from spreading to the country from Abyssinia, where it is endemic. No check can be put upon the caravan routes

along which the disease prevails. The outbreak has been met by the formation of camp hospitals some distance from the towns of Berbera and Bulhar. These hospitals consist of large matting huts, capable of holding from 10 to 20 patients. Owing to the dryness of the climate, the author states, these structures have proved efficient. Vaccination is not willingly accepted by the Somalis, who practise inoculation from mild cases. Compulsory vaccination is, however, carried out for all natives who are unvaccinated and desire to leave the country for Aden. 1,386 vaccinations were performed during the year.

Scurvy.—An outbreak of this disease occurred amongst the Indian troops stationed on the coast. It was successfully combated by the administration of camel's milk, this apparently having a high nutritive value and antiscorbutic properties. Vegetable gardens were also started with beneficial results and will be kept up if possible. A special report has appeared on this outbreak (see below).

Rheumatism.—What has been described in the returns as rheumatism was common during the year. The explanation of this, according to the writer of the report, was the general prevailing poverty and consequent exposure at night with insufficient protection during the cooler months. [No account is given of the variety of rheumatism encountered, and the occurrence of such a disease in a very hot and dry climate requires explanation. It might possibly be due to undulant fever.]

Helminthiasis.—Few cases of helminthic disease were recorded. Twelve patients were treated for *Ankylostoma duodenale.*

G. C. L.

Somaliland. **Reports on an Outbreak of Scurvy among the Troops in Somaliland during the Year 1912.** [Paget (A. J. M.).]—Reports to the Secretary of State for the Colonies. Received at the Colonial Office Nov. 2, 1912; and Dec. 28, 1912.

i. The outbreak occurred amongst an Indian detachment of 320 men who were sent to serve in Somaliland. The predisposing factors were the scarcity of vegetables due to the intense heat and the poor water supply.

The disease attacked 22 men of the Indian contingent, 103 men of the 119th infantry, one European and 7 prisoners: or a total of 133 cases. These numbers have gradually fallen to 74 at the time of writing (October 15th) with all cases progressing favourably towards recovery.

The conclusions the author draws from the outbreak are as follows:—

(1) That troops, even if supplied with an otherwise ample ration, if accustomed to vegetables cannot be expected to withstand an indifferent water supply with no fresh vegetables. This is especially so in the case of a normally vegetable feeding race, such as the Hindoos.

(2) The urgent local need for a good, or comparatively good, water supply being established.

(3) The necessity for keeping up local gardens where vegetables and other products could be grown.

ii. In the second report it is stated that with the exception of a single man all the patients completely recovered. In view of the very severe condition of some of the cases such a result is satisfactory. It is specially noticeable that the Mohammedans took far longer than any of the other patients to recover, once the scurvy symptoms became manifest. In the Hindoos, in distinction to the other or Mohammedan races affected, the principal symptoms were in the gums. The author draws attention to the remarkable circumstance that extensive local experience has entirely confirmed the failure of lime juice to effect a speedy cure of the symptoms. He can give no explanation of this. He believes that Indian troops would be much benefited if a regular camel-milk ration, of a pint per man per day, were given, even though this entailed a sacrifice of the meat ration.

G. C. L.

PHYLACOGENS.

Modified Bacterial Derivatives manufactured by PARKE, DAVIS & Co., according to the process of Dr. A. F. SCHAFER.

The remarkable success which has attended the use of this new class of therapeutic agents during the short period which has elapsed since their introduction to the medical profession is altogether unprecedented.

The following varieties are prepared; their field of service is indicated by their titles.

ERYSIPELAS PHYLACOGEN. **PNEUMONIA PHYLACOGEN.**
GONORRHŒA PHYLACOGEN. **RHEUMATISM PHYLACOGEN.**
MIXED INFECTION PHYLACOGEN.

Further particulars with reference to the above may be obtained from

PARKE, DAVIS & Co., 50, Beak St., London, W.

Now Ready. ***Price 7/6 net.*** *Postage in Great Britain, 4d. Abroad, 6d.*

Pp. xvi. + 232, with 17 Plates (1 Coloured).

The Care and Treatment of European Children in the Tropics.

By G. MONTAGU HARSTON, M.D.Lond., M.R.C.S.Eng., L.R.C.P.Lond.,
Fellow of the Society of Tropical Medicine and Hygiene; Fellow of the Royal Society of Medicine; Ophthalmic Surgeon to the Tung Wa Hospital, Hong Kong.

WITH INTRODUCTION BY **Sir PATRICK MANSON**, G.C.M.G., M.D.

London: BAILLIÈRE, TINDALL & COX,
8, Henrietta Street, Covent Garden.

Recently Published on behalf of the Sudan Government.

THE FOURTH REPORT OF THE

WELLCOME TROPICAL RESEARCH LABORATORIES,

KHARTOUM.

Since the Third Report was issued, in 1908, a great amount of valuable research work has been accomplished.

This Fourth Report contains the facts, observations and discoveries recently brought to light and is the actual record, at first hand, of new contributions to the solution of problems of deep and world-wide importance.

Volume A.—Medical. Large quarto. Cloth, pp. 404 and 174 illustrations, with many fine coloured plates. Price 21s. net.

Volume B.—General Science. Pp. 333, and 189 illustrations, with many coloured plates. Price 18s. net.

Second Review of some Recent Advances in Tropical Medicine, &c.

(Being a Supplement to the Fourth Report.) Pp. 428. Price 15s. net.

First Report, published in 1904. Price 12s. 6d. net.
Second Report, published in 1906. Price 17s. 6d. net.
Third Report, published in 1908. Price 21s. net.

Supplement to Third Report.—"REVIEW OF SOME OF THE MORE RECENT ADVANCES IN TROPICAL MEDICINE, &C." By A. BALFOUR and R. G. ARCHIBALD. Published in 1908. Price 10s. 6d. net.

These publications show the advance of the bacteriological and physiological study of the disorders affecting both man and beast in the Tropics, and also afford valuable information on the pioneer work of research which is the basis of the industrial development of a country newly opened to civilisation.

PROSPECTUS POST FREE.

BAILLIÈRE, TINDALL & COX,
8, Henrietta Street, Covent Garden, London.

BUREAU NOTICES.

Copies of THIMM'S "Bibliography of Trypanosomiasis" 1909, and of the *Kala Azar Bulletin* (four numbers) and a few broken sets of the *Sleeping Sickness Bulletin* are available for presentation. These will be sent subject to payment of carriage by the applicants.

Sleeping Sickness Bulletins Nos. 1–4 are out of print, and Nos. 33–40 are very scarce. Copies of these numbers will be gladly received at the Bureau.

Works in the Bureau Library may be consulted between 10 and 5.30.

The Director can be seen between 10 and 1; for a later hour an appointment should be made.

The Director will be glad to receive early copies of works or reprints on Tropical Diseases for notice in the *Bulletin* and for the Library. To be addressed—Tropical Diseases Bureau, Imperial Institute, London, S.W.

(Telephone :—Kensington, 743.)

The Director will be glad to receive any of the following volumes or parts which are needed to complete series in the Library of the Bureau :—

Annales d'Hygiène et Médecine Coloniales. Vols. 1–6.

Bulletin de la Société Médico-Chirurgicale de l'Indochine. Vols. 1 and 2.

Indian Medical Gazette. Vols. 1–43.

Journal of Comparative Pathology. Vols. 1–20.

Malaria e Malattie dei Paesi Caldi. Vols. 1 and 2.

Memoirs of the Liverpool School of Tropical Medicine. Nos. 2, 3, 5 (Part 2), 8 and 9.

The Lancet. 1902 (Vol. 2)—1907 (Vol. 1), inclusive; also for July 6, 13, 20, 27 and August 10, 1907, and August 1, 8, 15, 22, and 29, 1908.

Records of the Egyptian Government School of Medicine, Cairo, Vol. 1.

The Annual Subscription for the TROPICAL DISEASES BULLETIN is Twenty-one Shillings post free.

Subscriptions should be sent to Messrs. BAILLIÈRE, TINDALL and COX, 8, Henrietta Street, Covent Garden, London, W.C., who are also the advertisement agents.

The Bulletin appears as a rule twice a month. Each number contains from 50-60 pages.

Cloth cases for binding the Bulletins can be obtained from Messrs. BAILLIÈRE, TINDALL and COX, price One Shilling and Sixpence post free.

The Tropical Diseases Bureau publishes also the TROPICAL VETERINARY BULLETIN, quarterly, Annual Subscription Ten Shillings, single numbers Three Shillings post free.

CONTENTS.

PELLAGRA.

Page.

WOOD : A Treatise on Pellagra 679
JENNINGS & KING : Stomoxys a Possible Transmitter ... 681
TIZZONI & DE ANGELIS : The Strepto-bacillus of Pellagra 681
MILLS : The Gastro-Intestinal Tract in Pellagra 681
COHOON & FARNELL : Pellagra in Rhode Island... ... 682
ROBBINS ; SHERMAN : Cases of Pellagra 683–684
GREEN : Pellagra in Georgia... 684
ROSSI : Pellagra-Typhoid 685
MALFILATRE & DEVAUX : The Pellagroid Syndrome ... 686
GRIMM : Epidemiology of Pellagra 686
BRAULT : Pellagra in Algiers 688
SAMBON & CHALMERS : Pellagra in the British Isles ... 688
NILES ; MARTIN ; DYER : Treatment of Pellagra 689–691
BODENHEIMER : A Family of Pellagrins 691
REPORT OF ILLINOIS COMMISSION... 691
SEPPILLI : Alcoholism and Pellagra 692
SANTAMARIA : Pellagra (?) in Colombia 693
VOLPINO : Hypersensibility Reaction in Pellagra... ... 694
REED : The Effect of *Diplodia Zeae* on Maize 694

HELMINTHIASIS.

BANDI : Schistosomiasis 695
BASSETT-SMITH : The Blood in Katayama's Disease ... 695
GERBER : Case of *Hymenolepis nana* Infection (fig.) ... 695
THIRY : Strongyloides Infection in Lorraine Miners ... 697
JOHNSON : Ankylostomiasis in Texas 697
PEIPER ; Method of Infection in Ankylostomiasis ... 698
BASS : Intestinal Parasites in the United States 699
JAMISON : Intestinal Parasites in Costa Rica 699
MILLOUS : Intestinal Parasites in Indo-China 699
SCHÜFFNER & VERVOORT : Chenopodium Oil in Ankylostomiasis 700
ARTAULT : Thymol for Taenia 701
HERRICK : Experimental Eosinophilia 701
WEINBERG : Helminthic Toxins 702
Erratum 703

CHOLERA.

ARCHIBALD : Cholera Symptoms caused by *B. proteus* ... 704
MANCINI : Cholera complicated with Paratyphoid ... 704
CSERNEL : Mutation in Cholera Vibrios 705
MAZZETTI : The Metabolism of the Cholera Vibrio ... 705
PANE : Cholera Vibrios and Acids 706
BONIS & NATALE : Immunisation of Guinea-pigs with Cholera Nucleoproteid 706
NIJLAND : Cholera Vaccination 707

CHOLERA—*continued.*

Page.

SEGALE: Examination of Three Foetuses of Cholera Mothers 707
SCHIAVONE & TREROTOLI: Ultra Violet Rays and Cholera Vibrios 708
KRAUS: Cholera Measures in Bulgaria 708
VAN DIJKEN: Treatment of Cholera 709

DYSENTERY.

CARINI: Amoebic Phagedaena of the Skin 710
PFLETSCHINGER: Case of Amoebic Dysentery 711
PAVIOT & GARIN: Amoebic Dysentery in France ... 711
FIELD; ABBATUCCI; TURNER; CHAUFFARD: Liver Abscess 711–712
WALDOW: Uzara in Bowel Complaints 712
LAVERAN; ALLAN; CHAUFFARD; FLANDIN & DUMAS; COSTA; DOPTER: Treatment of Amoebic Dysentery and Amoebic Hepatitis by Emetine 713–714
MYER & COOK: Treatment by Ipecacuanha 714
LE ROY DES BARRES: Appendicostomy in Chronic Dysentery 715
MILIAN: '606' in Amoebic Dysentery 715
HORIMI: Toxins of Dysentery Bacillus 715
SANGIORGI & BONGIOANNINI: Bacillary Dysentery in Piedmont 717
ROUX: Antidysenteric Serum 717
MELLO-LEITAO: Flagellate Dysentery in Children ... 718
ESCOMEL: Trichomonas Dysentery 719
MILLOUS: Dysentery in Indo-China 720
DARLING: Pathogenic Entamoebae 720
JAMES: Infection with *Entamoeba tetragena* 722
VONWILLER: The Structure of Amoebae 722
MATHIEU; NORMET: The Differential Diagnosis of Dysenteric Colitis 723
STILES: Contamination of Food Supplies 724

SPRUE.

CASTELLANI & LOW: Fungi in Sprue 725

VERUGGA PERUVIANA.

COLE: Verruga in Man and Ape 726
MONGE: The Haemoleucocyte Formula in Verruga ... 726
MAYER, ROCHA-LIMA & WERNER: Pathological Researches in Verruga 727

ANNUAL REPORTS.

BRITISH GUIANA; CYPRUS; FIJI; GIBRALTAR; MALAY STATES; MONTSERRAT; SOMALILAND ... 729–736